NTISUB/C/127-001

January 1977

Monthly Energy Review

Federal Energy Administration

National Energy Information Center

The *Monthly Energy Review* is prepared in the Office of Energy Information and Analysis under the general supervision of John D. Curtis, Office of Energy Systems Data.

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The cooperation of other government agencies and private establishments which provide much of the data appearing in this publication is gratefully acknowledged.

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Subscriptions
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

For addresses inside the United States, the cost is $36 per subscription (12 issues). For addresses outside the United States, the cost is $50 per subscription.

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CRUDE OIL ENTITLEMENTS PROGRAM

by

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Introduction

The Federal Energy Administration's Crude Oil Entitlements Program[1] was proposed in August 1974[2] as a mechanism for preserving the competitive viability of small and independent petroleum refiners and the marketers of their products. Major integrated oil companies, at that time, had a significant cost advantage over small and independent refiners because of greater access to "old crude oil"[3] that sold at an average ceiling price of approximately $5 per barrel. In contrast, the market price of uncontrolled domestic crude oil[4] was approximately $10 per barrel in August 1974, and the cost of imported crude oil was almost $13 per barrel. The Entitlements Program was proposed as a method of allocating the benefit of access to low-cost old oil among refiners, so that there could be an equitable crude oil cost distribution among sectors of the petroleum industry, as required by the Emergency Petroleum Allocation Act of 1973 (EPAA).

Early in 1974 the Federal Energy Office (FEO)[5], under the authority of EPAA, took several steps to assure that crude oil shortages resulting from the Arab oil embargo did not have a disproportionate impact on small and independent refiners. FEO froze crude oil supplier/purchaser relationships that existed as of December 1, 1973. A Crude Oil Buy/Sell Program[6] was established so that crude oil supplies would be distributed equally among refiners based on a national average supply-to-capacity ratio. The program initially called for shifting crude oil from refiners with supply-to-capacity ratios higher than the national average to refiners with lower than average supply-to-capacity ratios. Later the shifts were made from major integrated oil companies to small refiners and to refiners with no significant ownership of production. Small refiners were defined as those with not more than 175,000 barrels per day of capacity, and independent refining companies were defined as those receiving more than 70 percent of their refinery input in 1972 from unaffiliated crude oil producing companies. The Buy/Sell Program provided for the distribution of any shortfall in total crude oil supplies so that small and independent refiners were not disproportionately affected by import reductions.

Neither the Buy/Sell Program nor the freeze of supplier/purchaser relationships was designed to assure refiners equal access to competitively-priced crude oil. A disparity of costs to refiners, estimated by FEA to be as much as $6 to $7 per barrel in August 1974 for all categories of crude oil, became a factor in the marketing of refined petroleum products after the Arab oil embargo ended. With crude oil no longer in short supply, the marketplace for refined products became more sensitive to price considerations, and the viability of refining operations with higher than average raw material costs was threatened. The Entitlements Program was thus initiated to bring crude oil costs for all classes of refiners into rough alignment through a system of monetary transfers. This could not have been efficiently accomplished under FEA regulations governing distribution systems for physical supplies.

In order to implement the Energy Policy and Conservation Act of 1975 (EPCA), FEA created an additional benefit to be allocated by the Entitlements Program, the benefit of access to domestic crude oil subject to an "upper tier" price ceiling. Effective February 1, 1976, the first sale of all domestic crude oil was subject to a price ceiling determined by FEA. EPCA set the national average price for all domestic production at $7.66 per

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[1] "Entitlements Program" is a common designation for regulations promulgated in Title 10 CFR § 211.67, originally known as the Old Oil Allocation Program and since April 1, 1976, known as the Domestic Crude Oil Allocation Program.

[2] *Federal Register,* Vol. 39, p. 31650, August 30, 1974.

[3] Domestically produced crude petroleum subject to a ceiling price initially established by the Cost of Living Council Phase IV regulatory program. Old oil is also referred to as controlled crude oil.

[4] Domestically produced crude oil, including new, released, and stripper oil, that could be sold at a price exceeding the ceiling price.

[5] The Federal Energy Office became the Federal Energy Administration (FEA) on June 27, 1974.

[6] "Buy/Sell Program" is a common designation for the Mandatory Crude Oil Allocation Program promulgated in Title 10 CFR § 211.65.

barrel. FEA implemented this price by adopting two price ceiling rules, an "upper tier" and a "lower tier" rule. The lower tier rule is similar to that which governed the price of old oil adopted in 1973 under the Cost of Living Council Phase IV wage and price controls.[7] The upper tier rule resulted in a price rollback of approximately $1.52 to an initial price of about $11.47 per barrel for all domestic crude oil production other than old oil.[8] Upper tier crude oil[9] accounted for 44 percent of domestic production in February 1976.

The Entitlements Program procedures were revised to equitably distribute among all refiners the cost advantage of upper tier crude oil over imported crude oil. The Program currently allocates the benefit of access to "deemed old oil" which is a category of oil created under Entitlements Program regulations to reflect the differential cost advantages of old oil and of upper tier crude oil over imported crude oil. The volume of a refiner's receipts of deemed old oil is equal to the sum of his receipts of old oil plus upper tier crude oil where one barrel of old oil is counted as one barrel of deemed old oil and one barrel of upper tier crude oil is counted as a fraction of a barrel of deemed old oil. (This fractional value is calculated monthly, and for the reporting month of June 1976, almost six barrels of upper tier crude oil were required to constitute one barrel of deemed old oil.)

Operation of the Program

The benefit of access to domestic crude oil is allocated through a system of direct payments by entitlement "buyers" to entitlement "sellers." An entitlement is the right of a refiner to receive into inventory and refine one barrel of deemed old oil in a particular month. Refiners are required to possess the number of entitlements each month to exactly cover their receipts of deemed old oil. They are issued each month a number of entitlements equal to the national average amount of deemed old oil receipts; small refiners are issued additional entitlements through a calculated small refiner bias based on size of refinery operations. Excess entitlements (where issuances are greater than receipts of deemed old oil) must be sold to entitlement buyers and insufficient entitlements (where deemed old oil receipts are greater than issuances) must be supplemented through purchases from entitlement sellers.

The procedures of the Program do not include actual transfers of oil or of certificates or documents of any kind. Based on monthly data received from all refiners and other firms eligible for the Program, FEA calculates which of the firms are required to buy entitlements, which are required to sell entitlements, and the number of entitlements to be bought and sold by each. Data reported include crude oil runs to stills[10], and receipts of old oil, upper tier crude oil, and imported crude oil. FEA does not act as a broker for entitlement transactions, but does assist firms unable to locate buyers or sellers within the prescribed time period each month. Transfers of entitlement benefits may not take place except according to procedures of the Program. Entitlements may not, for example, be reassigned as collateral for loans.

FEA issues entitlements by publishing a notice in the *Federal Register* about 6 weeks after the end of a reporting month (see Figure 1). For each refiner, the notice includes an entry for the number of entitlements issued by FEA, the volume in barrels of the refiners receipts of deemed old oil, and the difference between these, which is the number of entitlements the refiner is required to buy or sell. Entitlements are also issued for a portion of residual fuel oil imported on the East Coast; these entitlements appear in the notice as a separate entry. The price at which all entitlements must be sold is determined by FEA and is announced in the monthly notice.

All domestic refiners are subject to regulations governing the Entitlements Program. In addition, importers of residual fuel oil into the Bureau of Mines East Coast Refining District (see Figure 2) are eligible for the Program, as are Puerto Rican petrochemical plants using imported naphtha as a feedstock. The number of entitlements issuable for residual fuel oil imports is calculated in a different manner from those issuable for crude oil processing. Firms which import residual fuel receive a partial entitlement benefit; they are issued entitlements equal to 30 percent of those they would receive if residual fuel imports were treated as crude oil in the Program. These importers participate in the Entitlements Program as entitlement sellers. They receive benefits of the Program because they are issued entitlements by FEA and have no deemed old oil receipts to cover with the entitlements. In a similar

[7] The lower tier ceiling price is defined as the average selling price for a particular grade of crude oil in a particular field on May 15, 1973, plus $1.35. The upper tier ceiling price is defined as the average selling price for a particular grade of crude oil in a particular field on September 30, 1975, minus $1.32.

[8] The term "old oil" is used interchangeably with "lower tier crude oil."

[9] The term "upper tier crude oil" refers to domestic crude oil production subject to the upper tier price ceiling.

[10] Crude oil input to processing units.

Figure 1. ENTITLEMENTS FOR DOMESTIC CRUDE OIL*

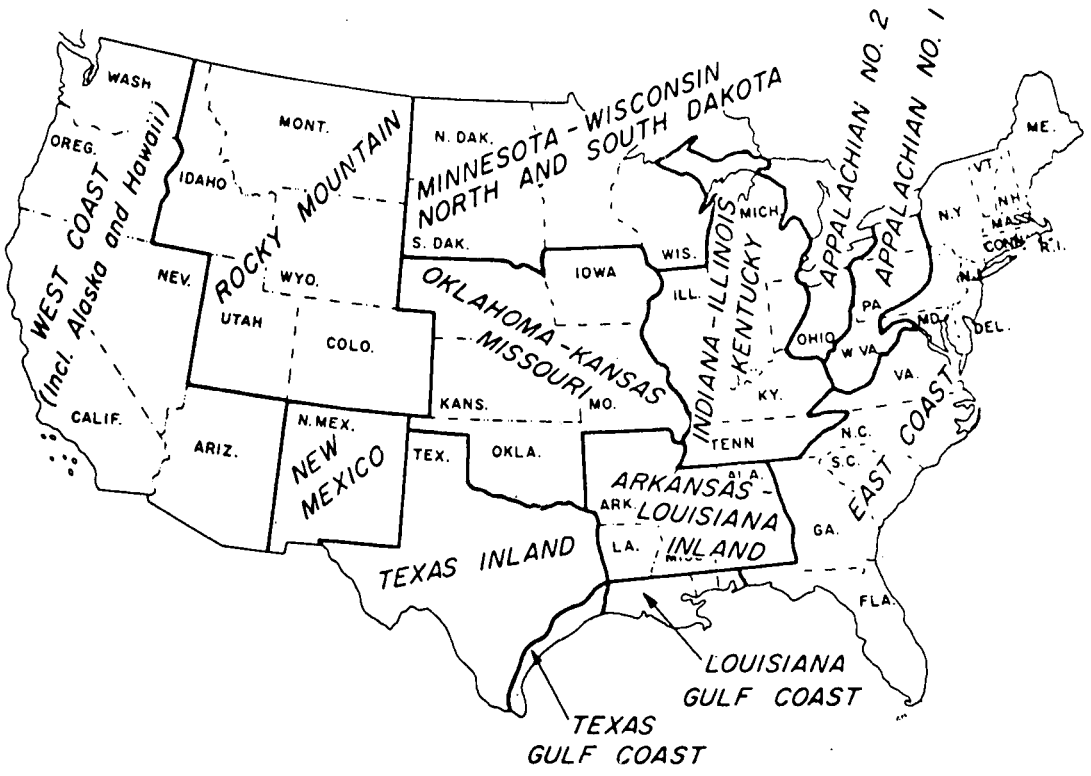
REPORTING FIRM SHORT NAME	DEEMED OLD OIL ADJUSTED RECEIPTS (Barrels)	********** TOTAL ISSUED	ENTITLEMENT POSITION EXCEPTIONS AND APPEALS	PRODUCT ENTITLEMENTS	REQUIRED TO BUY	********** REQUIRED TO SELL
			(Number of Entitlements)			
A-JOHNSON	0	130,097	0	26,250	0	130,097
ALLIED	47,596	86,812	0	0	0	39,216
AMER-PETROFINA	1,805,993	1,751,112	0	0	54,881	0
AMERADA-HESS	2,861,441	4,754,913	0	179,578	0	1,893,472
AMOCO	12,084,140	10,863,556	0	14,717	1,220,584	0
APCO	491,862	617,326	0	0	0	125,464
ARCO	6,897,668	6,457,410	0	0	140,258	0
ARIZONA	24,750	26,730	11,778	0	0	1,980
ASAMERA	10,895	24,275	0	0	0	13,380
ASHLAND	1,815,042	3,595,972	0	0	0	1,780,930
ASIATIC	0	177,658	0	177,658	0	177,658
BAYOU	32,953	44,252	0	0	0	11,299
BEACON	275,181	275,181	83,237	0	0	0
BELCHER	0	150,596	0	150,596	0	150,596
CALUMET	11,455	30,451	0	0	0	18,996
CANAL	63,804	67,443	0	0	0	3,639
CARIBOU	102,219	124,665	0	0	0	22,446
CF-PETROLEUM	0	799,740	0	0	0	799,740
CHAMPLIN	2,089,235	1,390,105	0	0	699,130	0
CHARTER	598,228	437,001	0	0	161,227	0
CITGO	3,735,621	2,435,950	0	0	1,299,671	0
CLAIBORNE	8,802	18,546	0	0	0	9,744
CLARK	398,726	1,099,397	0	0	0	700,671
COASTAL	821,872	1,398,902	0	0	0	577,030
COLONIAL	0	35,574	0	35,574	0	35,574
CONOCO	3,772,959	3,674,295	0	31,191	98,664	0
CORCO	0	1,508,254	208,907	0	0	1,508,254
CRA-FARMLAND	512,647	714,107	0	0	0	201,460
CROSS	24,344	291,527	0	0	0	267,183
CROWN	399,363	831,912	0	0	0	432,549
CRYSTAL-OIL	181,245	190,186	0	0	0	8,941
CRYSTAL-REF	1,818	49,287	0	0	0	47,469
DEEPWATER	0	7,850	0	7,850	0	7,850
DELTA	426,253	422,221	0	0	4,032	0

*Partial listing.

manner, the obligation of some refiners to buy entitlements may be reduced because of benefits they receive as importers of residual fuel oil, but these firms do not necessarily receive net benefits from the Program as a result of their importing activities. The benefits for Puerto Rican plants using naphtha feedstock are determined as the difference between an imputed domestic naphtha price and the average Puerto Rican naphtha price.

FEA calculates the number of entitlements issuable to refiners based on the monthly national average supply of deemed old oil. Each firm is entitled to process the average amount of deemed old oil relative to the size of its operations, as measured by its monthly volume of crude oil runs to stills. The national average supply of deemed old oil is reported by FEA in the monthly entitlements notice as a fraction that is designated the "national domestic crude oil supply ratio." The ratio is the proportion for the month of all refiners' receipts of deemed old oil to all refiners' crude oil runs to stills. This amount is further adjusted so that deemed old oil receipts are reduced by an amount equal to the number of entitlements received by small refiners for the month, and so that total crude oil runs to stills are supplemented by 30 percent of the volume of residual fuel imports. When applied to each refiner's runs to stills for a particular month, the ratio yields the number of entitlements that FEA issues to each refiner. Refiners with a higher than average proportion of deemed old oil are required to purchase entitlements from refiners with a lower than average proportion or from eligible firms with no deemed old oil supplies. To reduce the marketing advantage of domestic refiners producing residual fuel oil for sale in the Bureau of Mines East Coast Refining District, FEA reduces the number of

Figure 2. BUREAU OF MINES REFINING DISTRICTS



entitlements issued to these refiners by substracting from their volume of crude oil runs to stills an amount equal to 50 percent of the crude oil runs attributable to production of residual fuel oil for consumption or resale in the East Coast market in excess of the first 5,000 barrels per day.

The price of an entitlement is determined by FEA as the exact differential reported for each month between the weighted average booked cost to refiners of imported oil and the cost of old oil, less 21 cents. Twenty-one cents is the amount determined necessary by FEA as an incentive to refiners to process domestic crude oil rather than imported crude oil. Thus, after entitlement transactions are completed, the effective average cost to a refiner (other than a small refiner) of a barrel of deemed old oil, for which an entitlement must be purchased, becomes the average cost of a barrel of imported crude oil less 21 cents, and conversely, the effective average cost of a barrel of imported crude oil to a refiner with excess entitlements is the average cost of a barrel of old oil plus 21 cents.

To assure that the marketers who purchase refined products from firms which participate in the Entitlements Program also share its costs and benefits, regulations governing the Program were designed to mesh with FEA's Mandatory Petroleum Price Regulations. These price regulations require that the prices charged by a refiner be based on his costs and that these costs be allocated among refined products in a prescribed manner. Any increase in the cost of crude oil to a refiner may be passed on to purchasers of refined products, dollar-for-dollar, and any reduced costs of crude oil must result in lower product prices. Regulations governing the Entitlements Program specify that the cost of entitlements and the revenues received from the sale of entitlements must be included in a refiner's product cost accounts. (In the case of a refiner, the "product" cost is the cost of crude oil.) This provision applies as well to nonrefiner firms which participate in the program. All firms required to buy entitlements may pass on to purchasers of their products the cost of entitlements, and all firms required to sell entitlements may subtract entitlement revenues from their costs so that these benefits are passed on to their customers.

FEA determines the entitlement obligations of refiners by using monthly reported data. Therefore, a time lag exists in the operation of the Program such that allocation of benefits is made in the current month for a refiner's cost situation in a prior month. For example, an entitlement notice published in the *Federal Register* in August directs that reports certifying transactions between companies which reflect their entitlement positions in June be completed on or prior to August 31. Another lag inherent in the Entitlements Program occurs between the time crude oil is booked into a refinery and

the time it is processed, or the period of crude oil storage. Entitlements are issued for receipts of deemed old oil proportionate to crude oil runs to stills. However, the volume of a refiner's receipts of crude oil in any month is not necessarily equal to the volume of crude oil runs to stills for that month. For these reasons, the cost-equalization effected by the Entitlements Program does not occur in the month transactions are completed, but rather over time as crude oil is moved through a physical system and is tracked with an accounting system.

An Illustration

The following hypothetical cases of Refiners A and B have been constructed to illustrate the impact of the Entitlements Program on refiners' crude oil costs.

National data from FEA's entitlements notice for June 1976 are used to calculate the obligations of Refiner A and Refiner B with respect to sales and purchases of entitlements. These data include: (1) the national domestic crude oil supply ratio—0.328463; (2) the price of an entitlement—$7.91; and (3) the fraction of a barrel of deemed old oil receipts which is constituted by each barrel of a refiner's receipts of upper tier crude oil—0.170926.

The following assumptions are made about the operations of Refiner A and Refiner B for a 30-day reporting period:

	Refiner A	Refiner B
Runs to stills (bbl)[11]	6,000,000	6,000,000
Receipts of crude oil (bbl)		
Old oil	3,000,000	300,000
Upper tier crude oil	1,000,000	250,000
Imported crude oil	2,000,000	5,450,000
Residual fuel imports (bbl)	0	2,000,000
Residual fuel production for East Coast sale (bbl)	0	1,000,000

- Deemed old oil receipts:

  Deemed old oil = old oil receipts + (upper tier crude oil receipts X 0.170926)

  Refiner A

  3,170,926 bbl = 3,000,000 + (1,000,000 X 0.170926)

  Refiner B

  342,732 bbl = 300,000 + (250,000 X 0.170926)

- Entitlements issued:

  Entitlements issued = $\{$ total crude oil runs to stills - [(residual fuel production for East Coast sale - 5,000 bbl/d) X .50] + (East Coast residual fuel imports X .30)$\}$ X national domestic crude oil supply ratio

  Refiner A

  1,970,778 = (6,000,000 - 0 + 0) X 0.328463

  Refiner B

  2,028,259 = $\{$ 6,000,000 - [(1,000,000 - 150,000) X .50]+ (2,000,000 X .30)$\}$ X 0.328463

- Entitlements required to buy (or sell):

  Entitlements required to buy (or sell) = Deemed old oil receipts - entitlements issued

  Refiner A

  +1,200,148 = 3,170,926 - 1,970,778

  Refiner B

  -1,685,527 = 342,732 - 2,028,259

  Where (+) indicates the refiner is required to buy entitlements and (-) indicates the refiner is required to sell entitlements.

- Expenditure (revenue) impact of Entitlements Program:

  Expenditure (revenue) = Entitlements purchased (sold) X price of an entitlement

  Refiner A—Expenditures

  $9,493,170.68 = 1,200,148 X $7.91

  Refiner B—Revenue

  $13,332,518.57 = 1,685,527 X $7.91

  Thus, Refiner A would be required to purchase $9,493,170.68 worth of entitlements, whereas Refiner B would be required to sell $13,332,518.57 worth of entitlements.

Evolution of the Program

Regulations governing the Entitlements Program have been amended by FEA several times to establish

[11] It is also assumed that neither Refiner A nor Refiner B is considered a small refiner.

conformity with other Federal programs affecting the petroleum industry and to correct for aberrations in petroleum product markets which have resulted from the operation of the Program. In promulgating regulations for the Entitlements Program, FEA's task has been to integrate policies designed to (1) maintain historical petroleum market relationships as mandated by the Emergency Petroleum Allocation Act of 1973 (EPAA), (2) encourage the growth of domestic refining capacity as mandated by Presidential Proclamation 4210 of April 18, 1973,[12] (3) protect the special status of small refiners with respect to allocation regulations established by the EPAA and reaffirmed in the Energy Policy and Conservation Act of 1975 (EPCA), and, (4) ensure that refiners purchase supplies of domestic crude oil in preference to foreign crude oil where such supplies are available. For these reasons, the short history of the Entitlements Program has been complicated by frequent amendments to the Program regulations as the impact of these regulations on the petroleum industry has been evaluated. Rules governing the treatment of small refiners and of importers of refined petroleum products have most often been the subject of proposals to revise the Entitlements Program.

Effective February 1, 1976, all importers of residual fuel oil to the East Coast receive partial entitlement benefits. Entitlements are issued by FEA for 30 percent of a firm's volume of residual fuel imports, multiplied by the national domestic crude oil supply ratio. In addition, if a domestic refiner produces residual fuel oil for sale in the Bureau of Mines East Coast Refining District (see Figure 2), the volume of that refiner's crude oil runs to stills is adjusted by the entitlement calculation. This volume is reduced by an amount equal to 50 percent of the refiner's residual fuel oil production exceeding 5,000 barrels per day sold in the East Coast market. (See the example of Refiner B in the illustration on page 6.) These rules are intended to improve the competitive position of East Coast residual fuel oil marketers supplied by Caribbean refiners relative to marketers supplied by domestic refineries. For purposes of the Entitlements Program, the U.S. Virgin Islands refinery of Amerada Hess is considered a domestic refinery.

In May 1976, FEA transmitted to Congress a proposal to revise provisions of the Entitlements Program governing the additional entitlement benefits received by small refiners mandated by EPCA. These provisions were amended as proposed by FEA. Currently, refiners with average daily crude oil runs to stills of less than 175,000 barrels are issued extra entitlements according to the size group receiving a proportionately greater number of extra entitlements than the larger ones.

Conclusion

The foregoing description of FEA's Entitlements Program summarizes a complex set of regulations designed to alleviate some competitive imbalances in the petroleum refining industry which have resulted from Federal Government regulation of petroleum prices. The program will undoubtedly undergo further changes between now and May 1979, when the crude oil price controls of EPCA are scheduled to expire. Changes may be made in the program as the impact of recent amendments is evaluated. For example, in adopting amendments to the Entitlements Program regulations with respect to residual fuel oil marketed on the East Coast, FEA indicated that the operation and effectiveness of the Program would be reassessed before the end of 1976. Another example is an FEA proposal to restructure the Mandatory Oil Imports Program, which, if implemented, will affect refiners' costs. Such impacts will be monitored by FEA so that the Entitlements Program may be revised to achieve the purposes of equitable distribution of crude oil and petroleum product costs among sectors of the petroleum industry and regions of the country.

[12] This Proclamation marked the abolition of import quotas for crude oil and the implementation of a system of fee paid import licensing.

Part 1

Overview

Energy production in the United States during the first 11 months of 1976 was 55.0 quadrillion Btu (the equivalent of 28.3 million barrels per day of crude oil), down only 0.3 percent from the output level for the same months in 1975. This decrease in production was well below the 2.0-percent drop that occurred between the January-November periods of 1974 and 1975. Most of this year's production decline was due to a 2.6-percent drop in crude oil production. Natural gas output was also down, but only by 0.9 percent. Coal output, on the other hand, increased 2.4 percent during the period.

The United States consumed 3.4 percent more energy during the first 10 months of 1976 than during the similar period of 1975, reversing the downward trend of the previous 2 years when consumption declined at an average annual rate of 2.5 percent. Contributing to the increase was a 5.9-percent growth in coal usage and a 5.0-percent rise in demand for refined petroleum products. The increase in coal consumption reflects greater usage of coal by utilities for electric power generation, while the rise in consumption of petroleum is attributed to increased demand for motor gasoline and heating fuels. Natural gas consumption declined slightly (0.5 percent) during the period.

To meet the gap between domestic energy supplies and requirements, the United States imported 15.0 quadrillion Btu of fossil fuels (or 7.7 million barrels per day of crude oil equivalent) during the first 11 months of 1976, an increase of 18.4 percent from the import level for the corresponding months in 1975. Crude oil imports increased 28.8 percent and accounted for 68 percent of total fuel imports for the January-November period. Imports of refined products were up 0.9 percent and constituted 26 percent of the import total. Natural gas comprised the remaining 6 percent of fuel imports, and showed a 1.7-percent growth for the period.

The continental United States continued to accumulate an abnormally high number of degree-days during November as cold weather prevailed throughout most of the Nation. Distillate oil heating degree-days for the month were 21 percent above normal and 57 percent above the level for last November. Coinciding with the increase in heating degree-days was an 11.0-percent increase in utility electric power generation compared with generation during November 1975. Cumulative electricity production for the January-November period was 6.2 percent higher than for the same period in 1975.

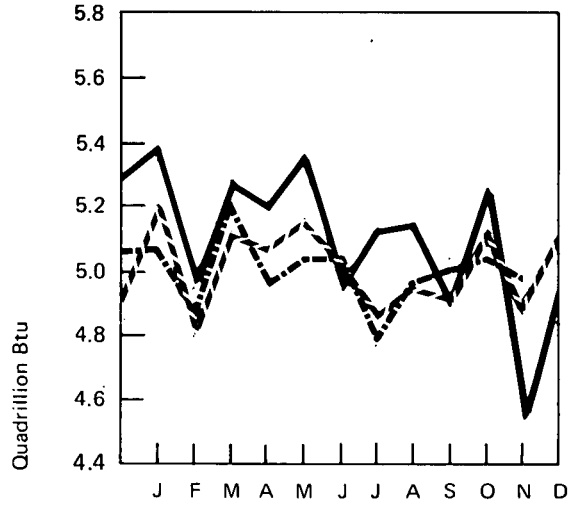
Retail gasoline prices dropped seasonally in November to 60.0 cents per gallon from 60.2 cents in October. (Prices are for regular gasoline at full service outlets.) The domestic average wellhead price of crude oil increased 6 cents in October to $8.45 per barrel in spite of the continued price freeze on upper tier and lower tier oil. FEA extended the crude oil price freeze through March 1977 and rolled back the price of upper tier oil by 20 cents per barrel effective January 1, 1977, in an effort to reduce the composite crude oil price to the level prescribed by the Energy Policy and Conservation Act.

Worldwide crude oil production during October reached another new high of 59.8 million barrels per day, surpassing the previous month's record by 1.7 million barrels per day. Production in the Arab member nations of the Organization of Petroleum Exporting Countries soared to 19.9 million barrels per day, accounting for all but 300,000 barrels per day of the total increase.

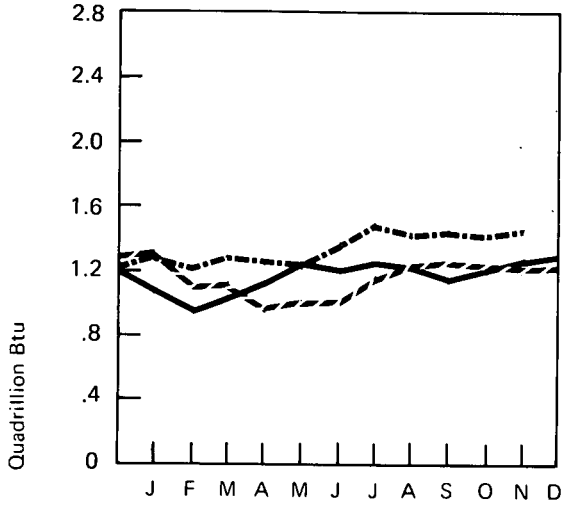
		Domestic Production of Energy*	Imports of Fossil Fuels**	Domestic Consumption of Energy***
			Quadrillion (10^{15}) Btu	
1974	January	5.393	1.072	6.796
	February	4.979	0.945	6.205
	March	5.294	1.053	6.264
	April	R5.198	1.142	5.759
	May	5.374	1.266	5.754
	June	4.945	1.197	5.535
	July	5.141	1.266	5.867
	August	5.157	1.237	5.900
	September	5.000	1.138	5.597
	October	R5.265	1.210	6.066
	November	R4.543	1.284	6.128
	December	R4.850	1.305	R6.733
	TOTAL	**R61.138**	**14.114**	**R72.604**
1975	January	R5.213	1.330	R6.956
	February	4.805	1.093	R6.109
	March	R5.131	1.128	R6.298
	April	R5.074	0.970	5.704
	May	R5.163	1.023	R5.385
	June	R5.013	1.028	R5.342
	July	4.862	1.169	5.581
	August	4.954	1.213	5.655
	September	R4.909	1.273	R5.414
	October	R5.133	1.226	R5.825
	November	R4.933	1.200	R5.768
	December	R5.107	1.219	6.819
	TOTAL	**R60.295**	**13.870**	**R70.855**
1976	January	5.069	1.296	7.215
	February	4.850	1.210	6.162
	March	5.212	1.301	6.391
	April	4.955	1.245	5.738
	May	5.050	1.232	5.667
	June	5.052	1.391	R5.700
	July	4.790	R1.507	R5.875
	August	4.974	1.416	R5.861
	September	R5.022	R1.466	R5.678
	October	R†5.051	R†1.426	††5.974
	November	†4.978	†1.484	NA
	TOTAL	**55.009** (11 months)	**14.976** (11 months)	**60.261** (10 months)

*See Explanatory Note 1.
**See Explanatory Note 2.
***See Explanatory Note 3.
†Preliminary data.
††Partially estimated.
R=Revised data.
NA=Not available.

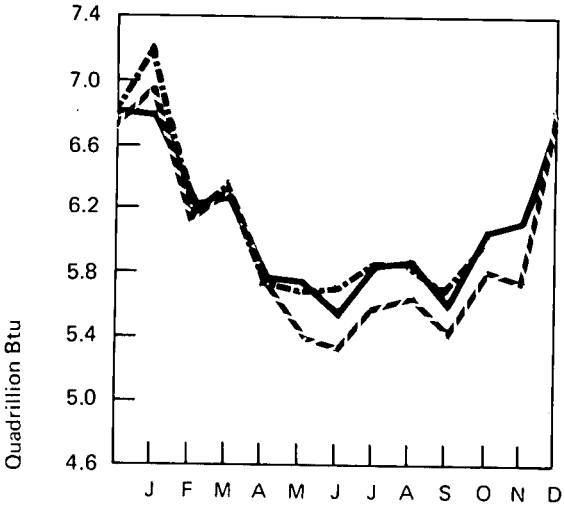
Domestic Production of Energy



Imports of Fossil Fuels



Domestic Consumption of Energy



1974
1975
1976

Part 2 Crude Oil and Refined Petroleum Products

Petroleum

Crude oil production in November averaged 8.10 million barrels per day, slightly less than the 8.13 million barrel-per-day average for the first 11 months of 1976. Crude oil input to refineries, which was down seasonally during October, rose to 13.89 million barrels per day in November. Crude oil imports continued to be high, averaging 5.84 million barrels per day for the 3-month period, September through November. This compares with 4.57 million barrels per day for the same 3-month period in 1975. Crude oil inventories remained at record levels.

Domestic demand for refined petroleum products rose seasonally in November to 18.24 million barrels per day, reflecting an unusually cold month. (It was the highest November demand level since 1973.) Refined products imports increased slightly to 2.12 million barrels per day.

Total petroleum imports averaged 7.97 million barrels in November, another record high. Major sources of petroleum imports (crude oil and refined petroleum products) were Saudi Arabia and Nigeria, 15 percent each; and Venezuela and Indonesia, 9 percent each. Crude oil accounted for 73 percent of total petroleum imports; residual fuel oil accounted for 71 percent of refined product imports.

Distillate Oil Heating Degree-Days

Very cold weather prevailed during November, and as a result, national distillate oil heating degree-days for the month were 21 percent greater than normal and 57 percent greater than last November. Distillate oil heating requirements in New England were 15 percent above normal; in the Middle Atlantic States, 22 percent above normal; and in the Midwest, 21 percent above normal. Requirements in the Southeastern and South Central States were 44 percent and 58 percent greater than normal, respectively. The Mountain and West Coast States, however, had warmer than usual weather, with distillate oil heating requirements 7 percent and 19 percent below normal, respectively.

Since July 1, 1976, oil heating degree-days for the continental States have been 28 percent above normal and 50 percent above the same period last year, reflecting much colder than usual weather.

Natural Gas Liquids

Domestic demand for natural gas liquids in September was 2.8 percent below the demand during September 1975. During the first 9 months of 1976, demand was 1.4 percent greater than the demand level for the same period in 1975.

Production of natural gas liquids in September was 2.6 percent above September 1975 production. Average production during the first 3 quarters of the year was 0.4 percent higher than the average for the same period in 1975.

Imports of natural gas liquids in September were 27.2 percent below the September 1975 level. Imports for the first 9 months, however, were up 2.2 percent from imports during the corresponding months of 1975.

Stocks of natural gas liquids at the end of September were at a record level of 147.5 million barrels and were 5.2 percent above the September 1975 stock level.

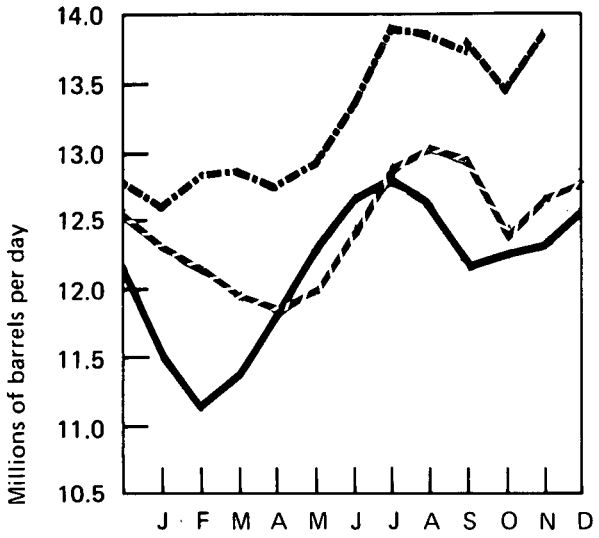
Crude Oil

		Crude Input to Refineries		Domestic Production		Imports		Stocks	
		Thousands of barrels per day						Thousands of barrels	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	11,491		8,934		2,382		233,035	
	February	11,102		9,142		2,248		240,723	
	March	11,355		8,965		2,462		244,665	
	April	11,823		8,954		3,267		256,385	
	May	12,333		8,911		3,908		269,455	
	June	12,697		8,780		3,925		268,765	
	July	12,811		8,780		4,091		268,686	
	August	12,644		8,699		3,924		264,840	
	September	12,124		8,443		3,797		266,726	
	October	12,286		8,611		3,810		269,437	
	November	12,332		8,569		3,958		271,144	
	December	12,519		8,527		3,869		265,020	
	AVERAGE	**12,133**		**8,774**		**3,477**			
1975	January	12,297		8,439		4,029		270,462	
	February	12,135		8,575		3,828		276,755	
	March	11,905		8,476		3,656		279,989	
	April	11,803		8,440		3,378		284,990	
	May	11,983		8,371		3,486		276,110	
	June	12,417		8,409		3,905		276,132	
	July	12,915		8,327		4,193		264,157	
	August	13,046		8,237		4,581		256,616	
	September	12,945		8,266		4,689		259,446	
	October	12,365		8,310		4,389		269,584	
	November	12,689		8,271		4,623		270,950	
	December	12,779		8,239		4,476		271,354	
	AVERAGE	**12,442**		**8,362**		**4,105**			
1976	January	12,560		8,211		4,595		289,296	
	February	12,834		8,196		4,208		277,414	
	March	12,877		8,175		4,738		283,112	
	April	12,727		8,080		4,790		286,628	
	May	12,920		8,168		4,669		283,982	
	June	13,351		8,144		5,621		281,715	
	July	13,901		8,104		5,792		282,559	
	August	13,888		8,075		5,556		277,272	
	September	13,716	13,818	8,185	8,161	5,875	5,996	284,357	294,951
	October		13,404		8,018		5,793		306,959
	November		13,888		8,101		5,847		291,903
	AVERAGE* (11 months)		**13,279**		**8,132**		**5,229**		

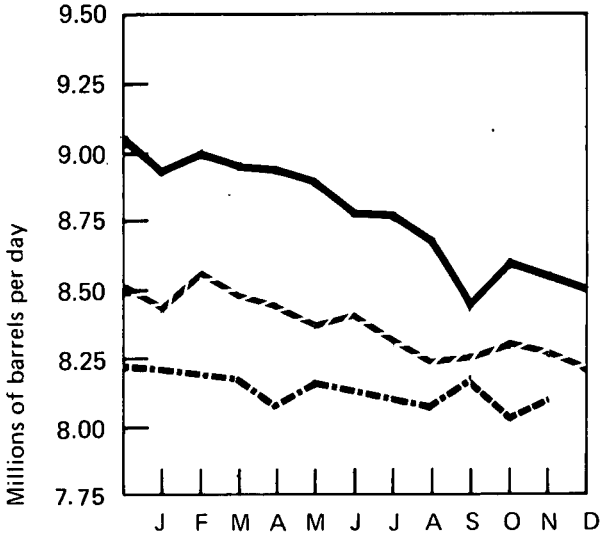
*Eleven-month average is based on Bureau of Mines data for January through September, FEA data for October, and American Petroleum Institute data for November.

Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

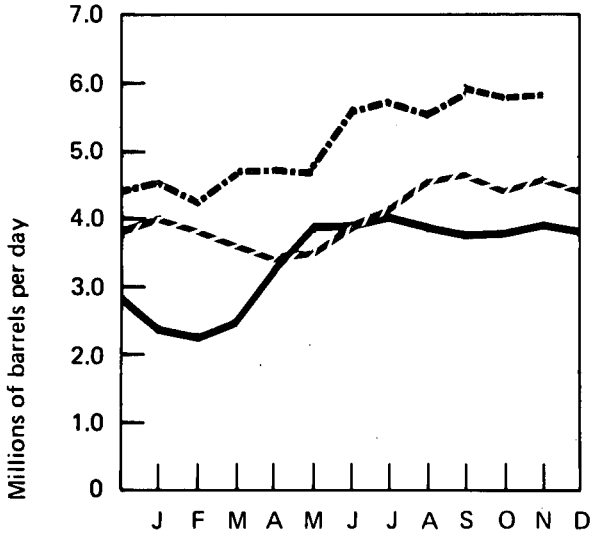
Crude Input to Refineries



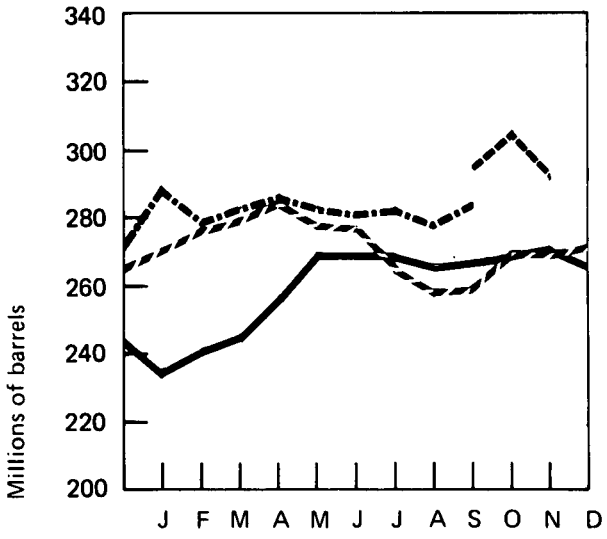
Domestic Production



Imports



Stocks



1974 BOM
1975 BOM
1976 BOM
1976 FEA/API

Total Refined Petroleum Products

Total Petroleum Imports

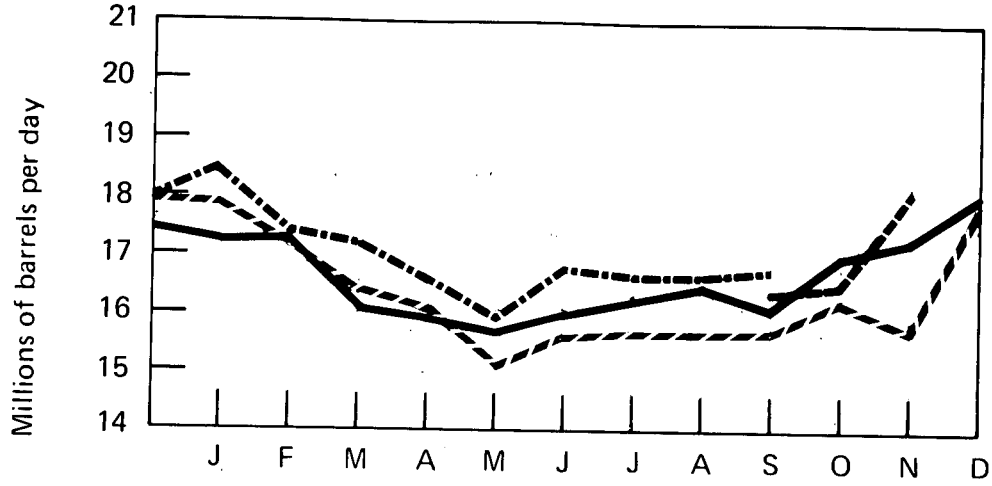
		Domestic Demand		Imports*			
		Thousands of barrels per day				Thousands of barrels per day	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	17,286		2,989		5,371	
	February	17,366		2,968		5,216	
	March	16,104		2,812		5,274	
	April	15,929		2,713		5,980	
	May	15,726		2,586		6,494	
	June	16,117		2,435		6,360	
	July	16,349		2,445		6,536	
	August	16,550		2,438		6,362	
	September	16,024		2,255		6,052	
	October	17,050		2,366		6,176	
	November	17,351		2,840		6,798	
	December	18,013		2,798		6,667	
	AVERAGE	**16,653**		**2,635**		**6,112**	
1975	January	17,983		2,811		6,840	
	February	17,248		2,348		6,176	
	March	16,316		2,074		5,730	
	April	16,041		1,655		5,033	
	May	15,118		1,690		5,176	
	June	15,611		1,502		5,407	
	July	15,762		1,789		5,982	
	August	15,767		1,681		6,262	
	September	15,769		2,116		6,805	
	October	16,344		1,907		6,296	
	November	15,721		1,739		6,362	
	December	17,987		1,751		6,227	
	AVERAGE	**16,291**		**1,920**		**6,025**	
1976	January	18,599		2,070		6,665	
	February	17,429		2,423		6,631	
	March	17,299		1,946		6,684	
	April	16,672		1,805		6,595	
	May	15,977		1,654		6,323	
	June	16,836		1,858		7,479	
	July	16,613		2,098		7,890	
	August	16,642		1,826		7,382	
	September	16,825	16,417	2,038	1,777	7,913	7,773
	October		16,591		1,615		7,408
	November		18,238		2,122		7,969
	AVERAGE** (11 months)		**17,062**		**1,947**		**7,176**

*See definitions.

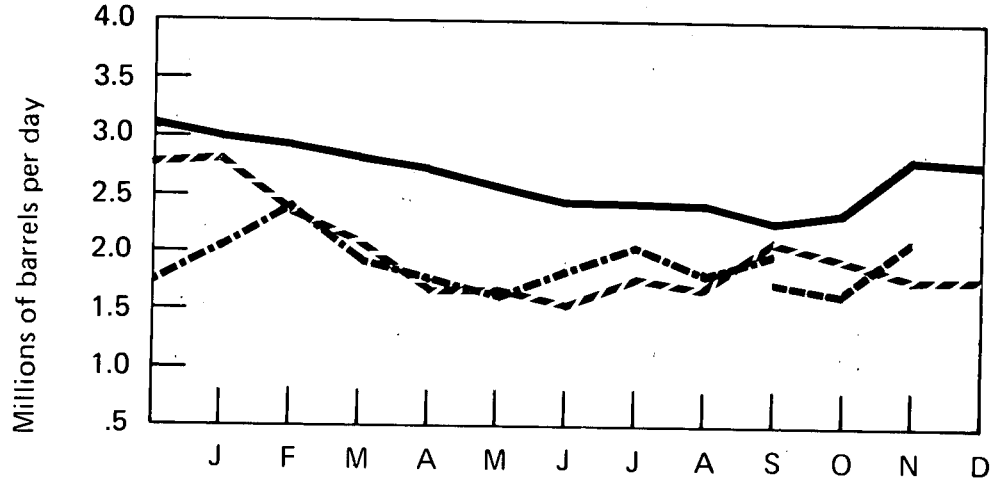
**Eleven-month average is based on Bureau of Mines data for January through September, FEA data for October, and American Petroleum Institute data for November.

Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

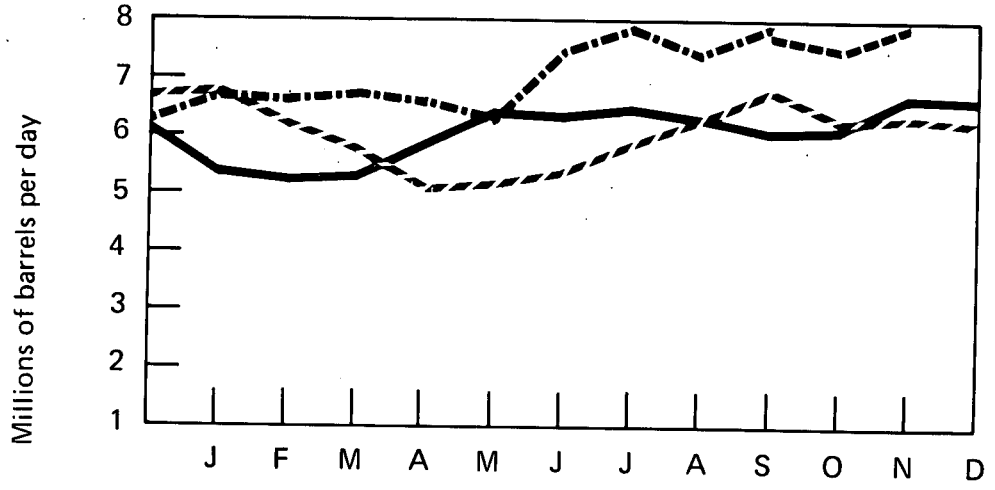
Total Refined Product Domestic Demand



Refined Product Imports



Total Petroleum Imports



1974 BOM
1975 BOM
1976 BOM
1976 FEA/API

Motor Gasoline

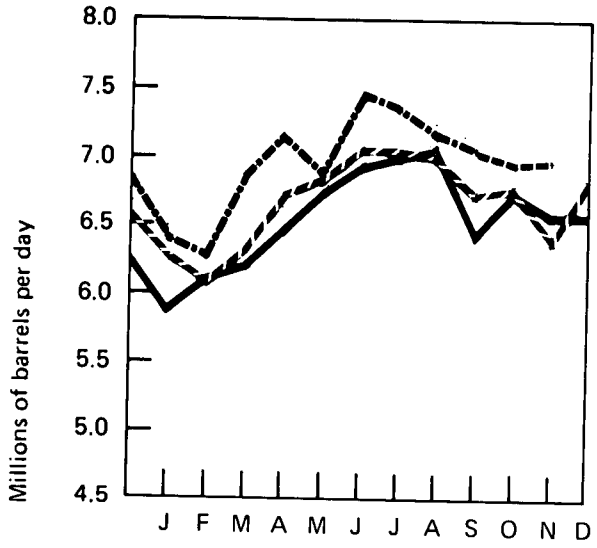
		Domestic Demand		Production*		Imports		Stocks*	
		Thousands of barrels per day						Thousands of barrels	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	5,804		5,900		163		217,463	
	February	6,100		5,969		184		219,058	
	March	6,162		5,982		225		220,307	
	April	6,457		6,311		260		223,752	
	May	6,745		6,329		250		218,670	
	June	6,919		6,663		211		217,381	
	July	6,959		6,793		212		218,838	
	August	7,061		6,815		253		218,951	
	September	6,388		6,453		202		227,031	
	October	6,712		6,336		171		220,748	
	November	6,547		6,292		174		218,385	
	December	6,558		6,419		141		224,719	
	AVERAGE	**6,537**		**6,358**		**204**			
1975	January	6,206		6,509		262		242,285	
	February	6,096		6,276		171		251,915	
	March	6,326		6,070		150		248,685	
	April	6,718		6,046		133		232,556	
	May	6,871		6,126		142		213,947	
	June	7,076		6,669		177		207,114	
	July	7,041		7,003		209		212,454	
	August	7,008		6,872		232		215,480	
	September	6,729		6,822		269		226,447	
	October	6,778		6,409		207		221,493	
	November	6,389		6,602		139		232,091	
	December	6,808		6,786		119		234,925	
	AVERAGE	**6,674**		**6,518**		**184**			
1976	January	6,398		6,483		92		240,464	
	February	6,263		6,472		84		248,854	
	March	6,890		6,455		123		239,049	
	April	7,159		6,562		99		223,965	
	May	6,853		6,774		112		225,037	
	June	7,482		7,303		188		225,365	
	July	7,354		7,218		190		229,405	
	August	7,168		7,149		141		230,578	
	September	7,079	7,075	6,878	6,884	171	166	229,751	226,386
	October		6,912		6,677		134		223,251
	November		6,994		6,896		160		226,078
	AVERAGE** (11 months)		**6,961**		**6,806**		**136**		

*See definitions.

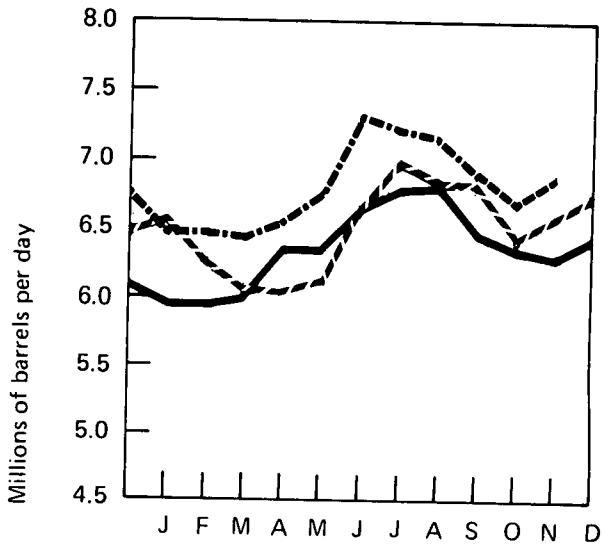
**Eleven-month average is based on Bureau of Mines data for January through September, FEA data for October, and American Petroleum Institute data for November.

Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

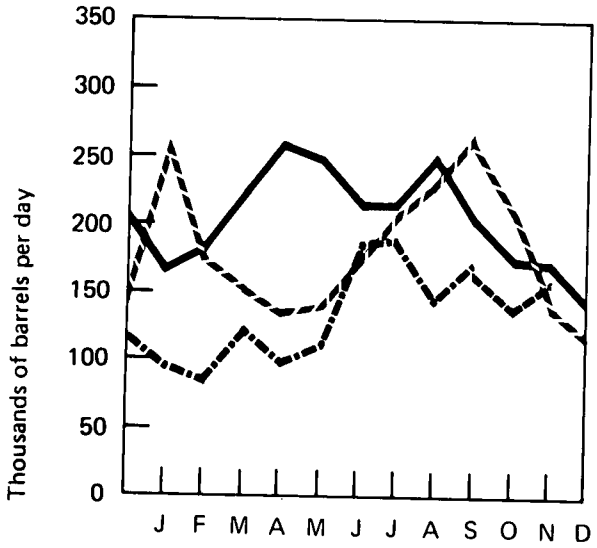
Domestic Demand



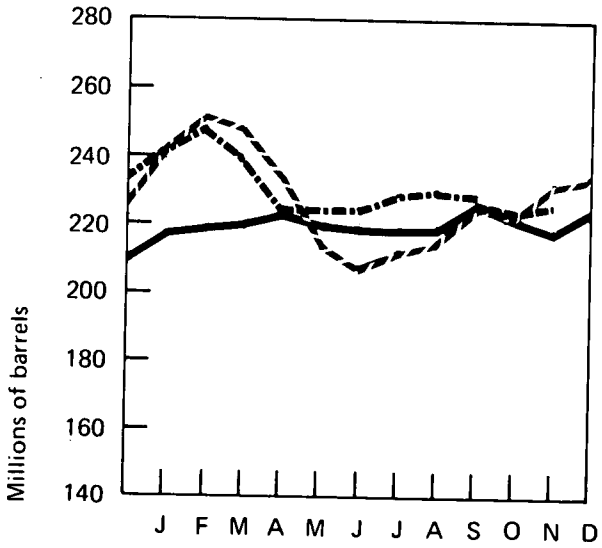
Production



Imports



Stocks



1974 BOM
1975 BOM
1976 BOM
1976 FEA/API

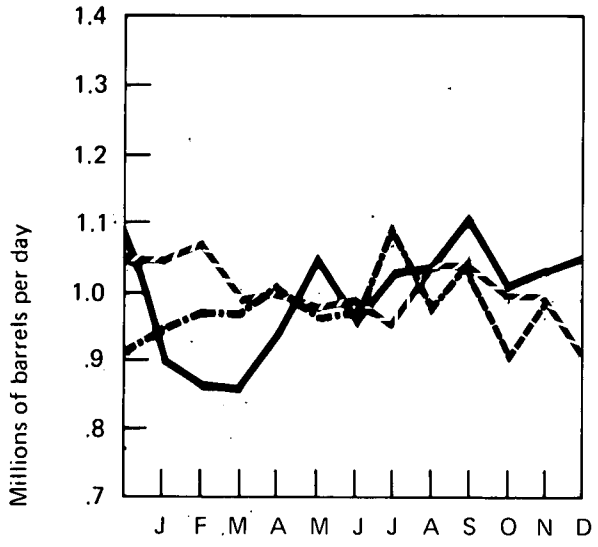
Jet Fuel

		Domestic Demand		Production		Imports		Stocks	
		Thousands of barrels per day						Thousands of barrels	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	895		800		136		29,732	
	February	860		783		75		29,617	
	March	956		832		139		29,996	
	April	941		868		132		31,725	
	May	1,053		868		205		32,324	
	June	952		810		141		32,200	
	July	1,028		802		214		31,671	
	August	1,031		805		206		30,989	
	September	1,109		867		217		30,186	
	October	1,011		868		161		30,564	
	November	1,032		863		140		29,616	
	December	1,043		861		178		29,776	
	AVERAGE	**993**		**836**		**163**			
1975	January	1,041		831		229		30,321	
	February	1,075		835		200		29,133	
	March	982		896		130		30,456	
	April	1,006		864		138		30,263	
	May	977		861		133		30,719	
	June	989		839		106		29,337	
	July	954		883		88		29,798	
	August	1,046		958		132		31,103	
	September	1,040		907		140		31,291	
	October	997		863		106		30,410	
	November	999		864		89		28,977	
	December	911		849		109		30,380	
	AVERAGE	**1,001**		**871**		**133**			
1976	January	948		889		69		30,618	
	February	966		918		72		31,180	
	March	965		927		86		32,619	
	April	1,010		927		108		33,332	
	May	960		899		106		34,664	
	June	972		879		68		33,879	
	July	1,099		933		130		32,732	
	August	965		942		38		33,121	
	September	1,048	1,033	990	974	63	58	33,204	32,987
	October		900		889		43		33,891
	November		985		896		118		32,756
	AVERAGE* (11 months)		**983**		**917**		**82**		

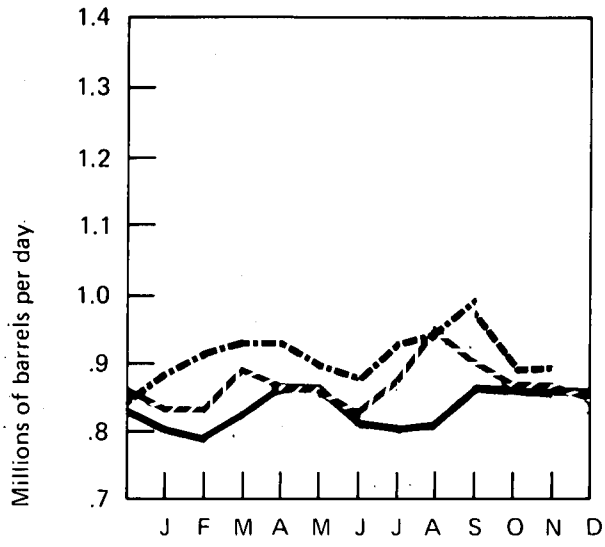
*Eleven-month average is based on Bureau of Mines data for January through September, FEA data for October, and American Petroleum Institute data for November.

Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

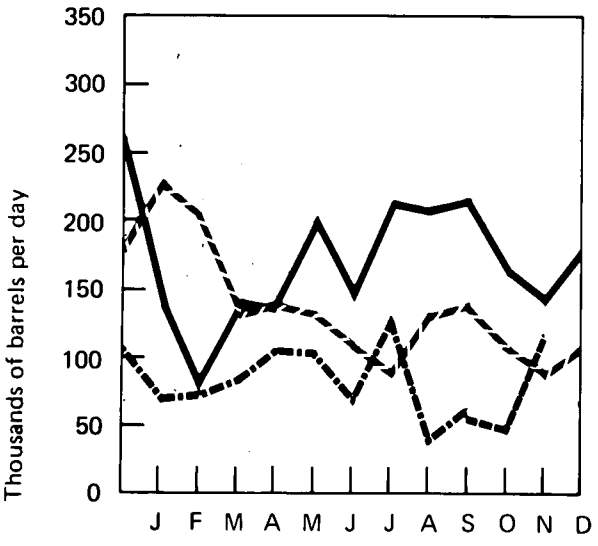
Domestic Demand



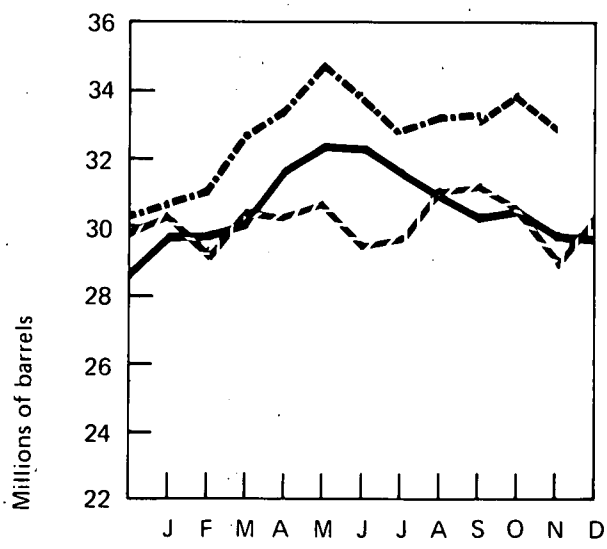
Production



Imports



Stocks



1974 BOM
1975 BOM
1976 BOM
1976 FEA/API

Distillate Fuel Oil

		Domestic Demand		Production*		Imports		Stocks*	
		Thousands of barrels per day						Thousands of barrels	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	3,835		2,880		464		181,179	
	February	3,849		2,399		306		149,125	
	March	3,164		2,226		287		128,822	
	April	2,852		2,522		220		125,553	
	May	2,450		2,704		268		141,806	
	June	2,377		2,783		220		160,645	
	July	2,309		2,792		221		182,458	
	August	2,309		2,705		125		198,673	
	September	2,385		2,552		152		208,269	
	October	2,887		2,700		237		209,908	
	November	3,157		2,801		454		212,875	
	December	3,853		2,924		515		223,717	
	AVERAGE	**2,948**		**2,668**		**289**			
1975	January	3,953		2,852		324		199,715	
	February	3,967		2,679		302		176,696	
	March	3,293		2,531		256		161,111	
	April	3,094		2,486		110		146,214	
	May	2,382		2,431		136		152,027	
	June	2,266		2,574		68		163,306	
	July	2,112		2,589		106		181,472	
	August	2,173		2,592		92		197,323	
	September	2,163		2,812		129		220,732	
	October	2,675		2,744		103		226,113	
	November	2,544		2,767		96		235,749	
	December	3,778		2,783		124		208,787	
	AVERAGE	**2,849**		**2,653**		**153**			
1976	January	4,298		2,734		164		165,428	
	February	3,687		2,961		207		150,439	
	March	3,336		2,793		151		138,306	
	April	2,788		2,655		96		137,249	
	May	2,519		2,738		97		147,057	
	June	2,436		2,885		151		165,064	
	July	2,255		2,959		126		190,861	
	August	2,237		2,982		131		217,930	
	September	2,618	2,673	2,947	2,998	147	159	232,230	229,552
	October		3,085		3,032		159		232,815
	November		3,403		3,094		182		216,289
	AVERAGE** (11 months)		**2,967**		**2,988**		**146**		

*See definitions.
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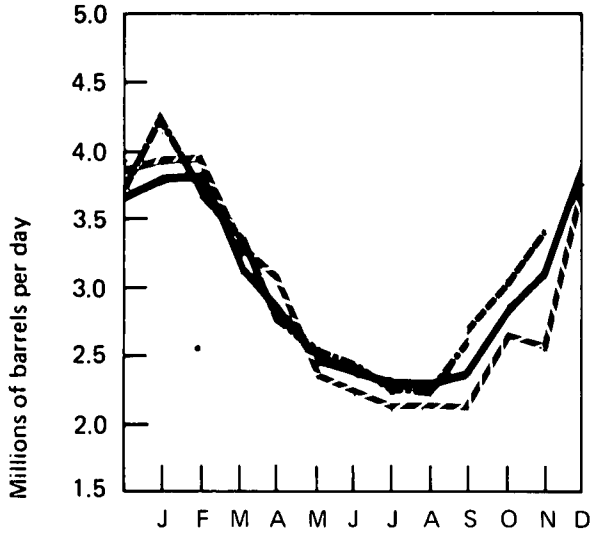
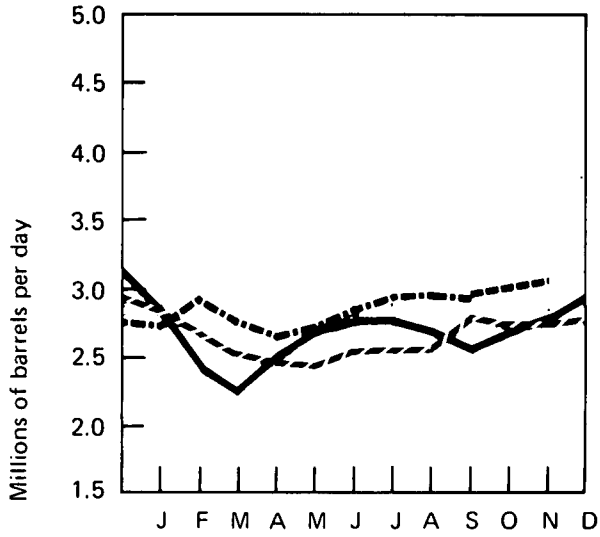
Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

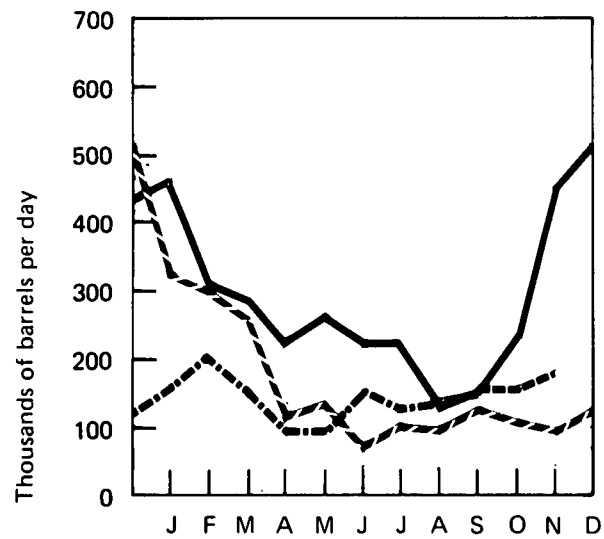
Domestic Demand



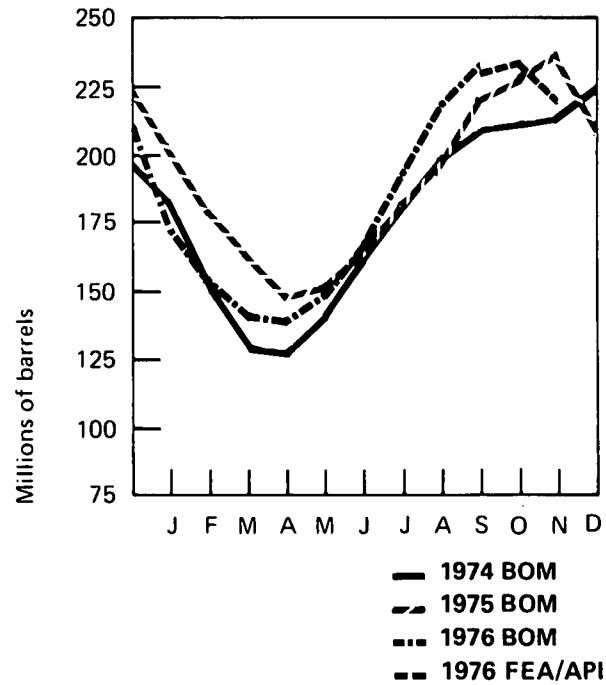
Production



Imports



Stocks



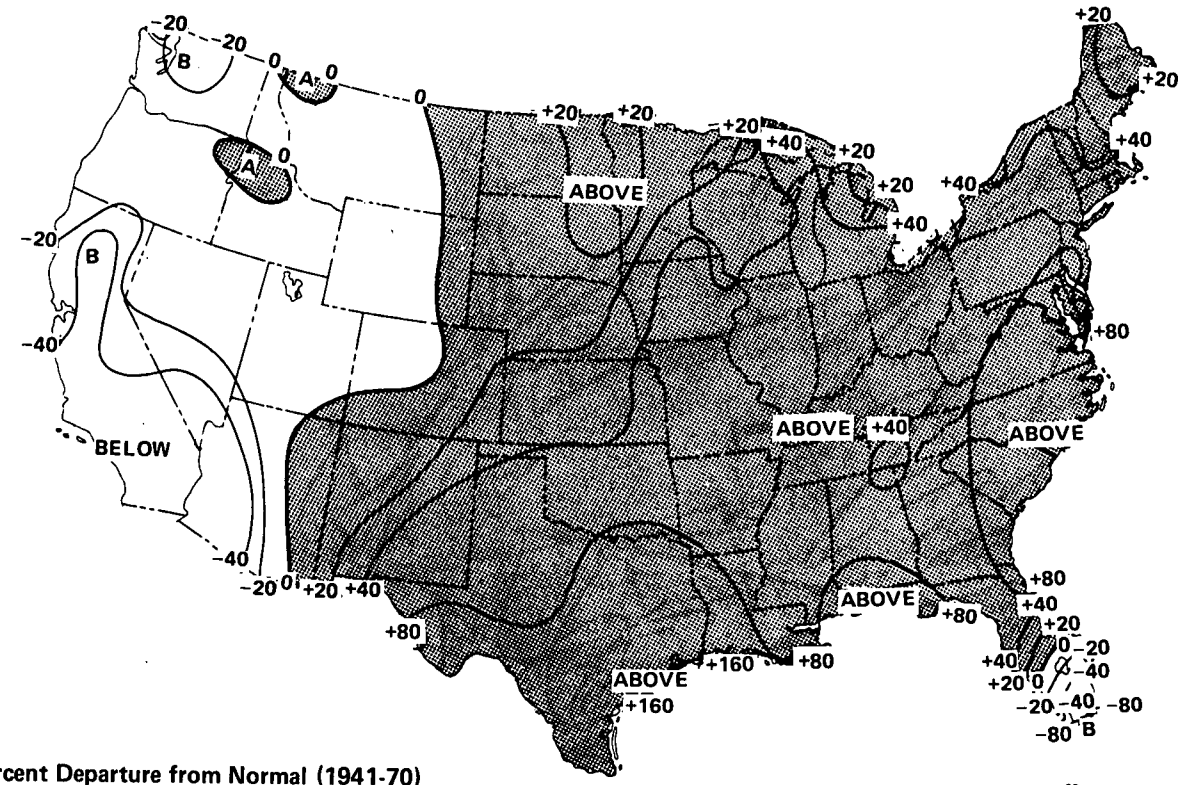
Distillate Oil Heating Degree-Days*

Petroleum Administration for Defense (PAD) Districts	NOVEMBER (November 1 - November 28) 1976	1975**		Normal (1941-70)**		Cumulative Since July 1 1976	1975**		Normal (1941-70)**	
PAD District I	606.7	362.4	(67.4)	496.1	(22.3)	1,072.3	669.2	(60.3)	826.5	(29.7)
New England Conn., Maine, Mass., N.H., R.I., Vt.	698.4	441.8	(58.1)	609.3	(14.6)	1,314.0	887.0	(48.1)	1,097.4	(19.7)
Middle Atlantic Del., Md., N.J., N.Y., Pa.	680.8	397.3	(71.4)	560.3	(21.5)	1,209.2	746.6	(62.0)	925.2	(30.7)
Lower Atlantic Fla., Ga., N.C., S.C., Va., W.Va.	358.3	210.5	(70.2)	248.2	(44.4)	543.4	291.4	(86.5)	351.5	(54.6)
PAD District II Ill., Ind., Iowa, Kans., Ky., Mich., Minn., Mo., Nebr., N. Dak., Ohio, Okla., S. Dak., Tenn., Wisc.	864.1	561.9	(53.8)	711.7	(21.4)	1,574.0	1,096.1	(43.6)	1,212.9	(29.8)
PAD District III Ala., Ark., La., Miss., N. Mex., Tex.	429.3	281.0	(52.8)	272.0	(57.8)	643.5	362.1	(77.7)	360.0	(78.8)
PAD District IV Colo., Idaho, Mont., Utah, Wyo.	718.7	805.8	(-10.8)	770.4	(-6.7)	1,368.9	1,445.3	(-5.3)	1,424.3	(-3.9)
PAD District V Ariz., Calif., Nev., Oreg., Wash.	370.3	456.9	(-19.0)	455.6	(-18.7)	727.6	889.6	(-18.2)	943.9	(-22.9)
U.S. TOTAL	**648.5**	**412.8**	**(57.1)**	**534.7**	**(21.3)**	**1,154.1**	**767.6**	**(50.4)**	**900.0**	**(28.2)**

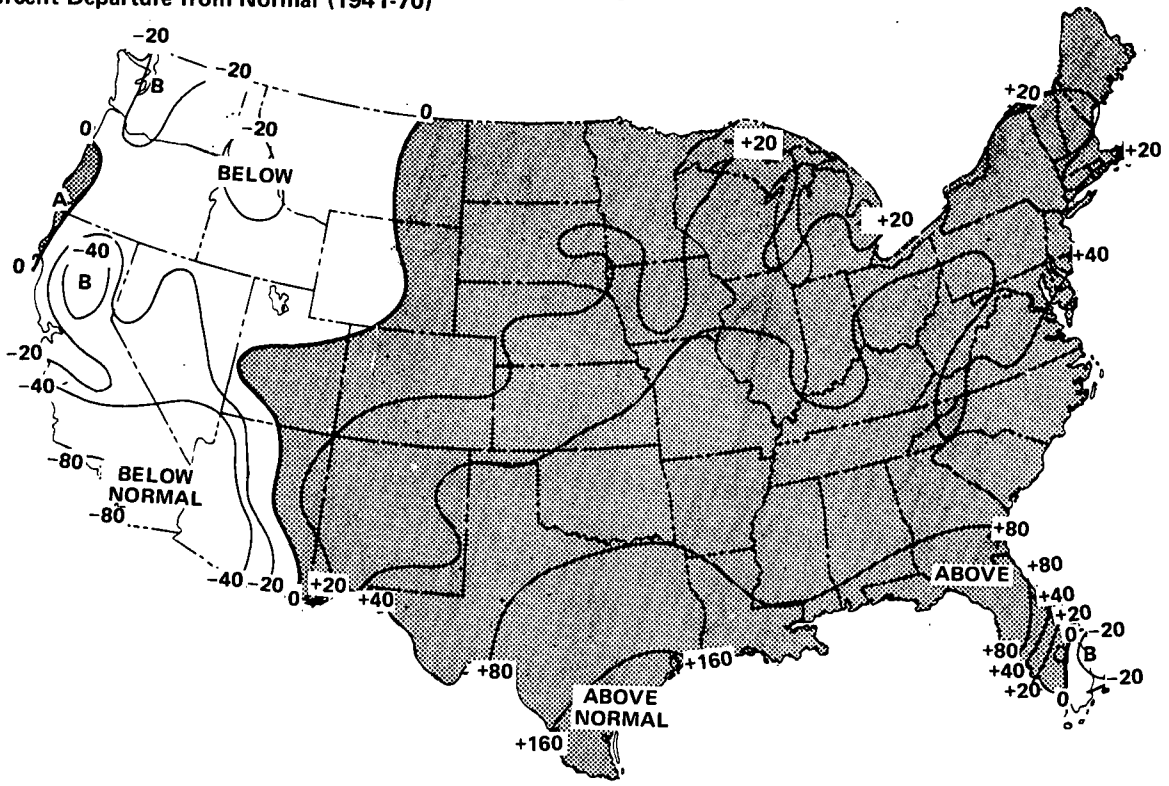
*See Explanatory Note 4 for explanation of distillate oil heating degree-days.
**Percentage change in parentheses.

Heating Degree-Days Accumulated from July 1, 1976 through November 28, 1976

Percent Departure from 1975



Percent Departure from Normal (1941-70)



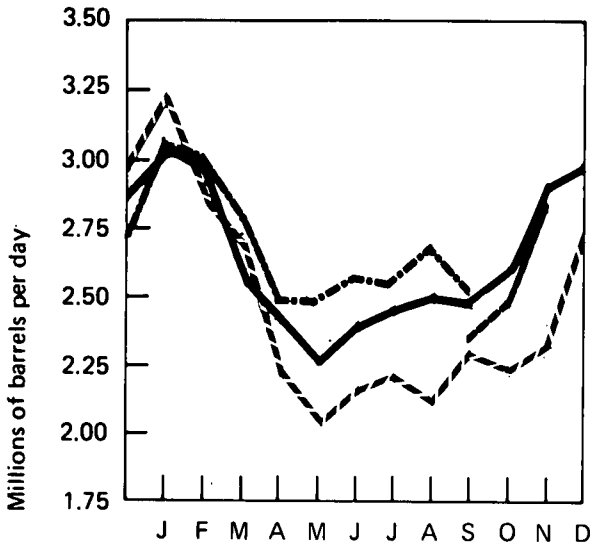
Note: Above normal heating degree-days correspond to below normal temperatures.
Source: Department of Commerce—NOAA.

Residual Fuel Oil

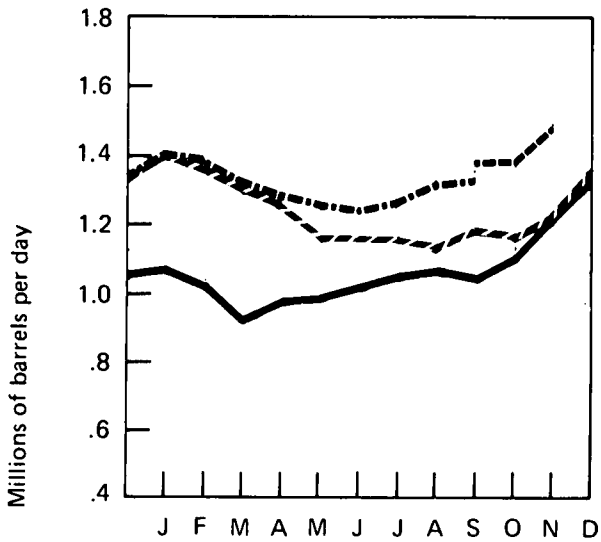
		Domestic Demand		Production		Imports		Stocks	
		Thousands of barrels per day						Thousands of barrels	
		BOM	FEA/API	BOM	FEA/API	BOM	FEA/API	BOM	FEA/API
1974	January	3,035		1,072		1,733		46,548	
	February	2,991		1,029		1,904		45,004	
	March	2,556		912		1,713		47,222	
	April	2,437		985		1,593		51,339	
	May	2,260		995		1,362		54,356	
	June	2,405		1,026		1,500		57,891	
	July	2,473		1,056		1,474		59,787	
	August	2,529		1,067		1,520		60,988	
	September	2,475		1,032		1,421		60,251	
	October	2,611		1,099		1,465		58,679	
	November	2,935		1,229		1,753		60,363	
	December	2,983		1,335		1,630		74,939	
	AVERAGE	**2,639**		**1,070**		**1,587**			
1975	January	3,242		1,415		1,647		60,233	
	February	2,849		1,354		1,402		66,495	
	March	2,668		1,299		1,292		64,148	
	April	2,225		1,245		1,047		66,340	
	May	2,049		1,151		1,123		73,498	
	June	2,179		1,152		904		69,660	
	July	2,239		1,155		1,144		71,526	
	August	2,118		1,146		982		71,857	
	September	2,329		1,183		1,312		76,938	
	October	2,238		1,165		1,221		81,858	
	November	2,349		1,214		1,169		83,131	
	December	2,728		1,354		1,099		74,126	
	AVERAGE	**2,433**		**1,235**		**1,194**			
1976	January	3,069		1,415		1,406		66,592	
	February	3,007		1,394		1,703		68,859	
	March	2,779		1,311		1,342		65,132	
	April	2,496		1,283		1,258		66,458	
	May	2,479		1,257		1,134		65,147	
	June	2,565		1,241		1,240		64,272	
	July	2,555		1,266		1,460		69,812	
	August	2,678		1,321		1,307		68,490	
	September	2,519	2,348	1,330	1,352	1,442	1,274	76,436	76,475
	October		2,480		1,368		1,201		78,994
	November		2,842		1,498		1,473		68,755
	AVERAGE* (11 months)		**2,678**		**1,335**		**1,358**		

*Eleven-month average is based on Bureau of Mines data for January through September, FEA data for October, and American Petroleum Institute data for November.
Sources: Bureau of Mines (BOM) and Federal Energy Administration (FEA). Data for latest month are from American Petroleum Institute (API).

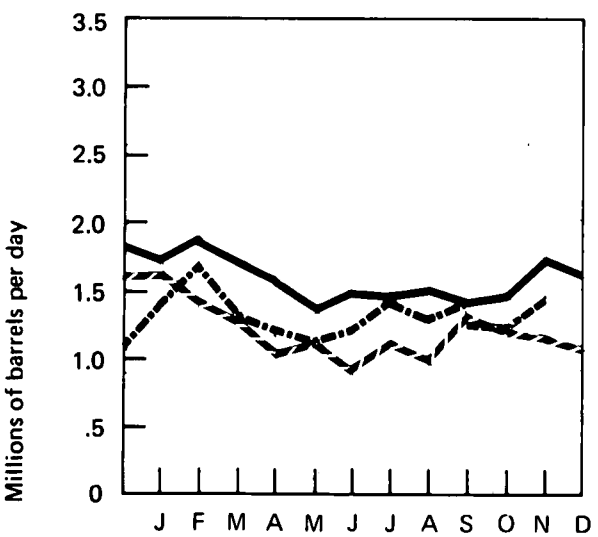
Domestic Demand



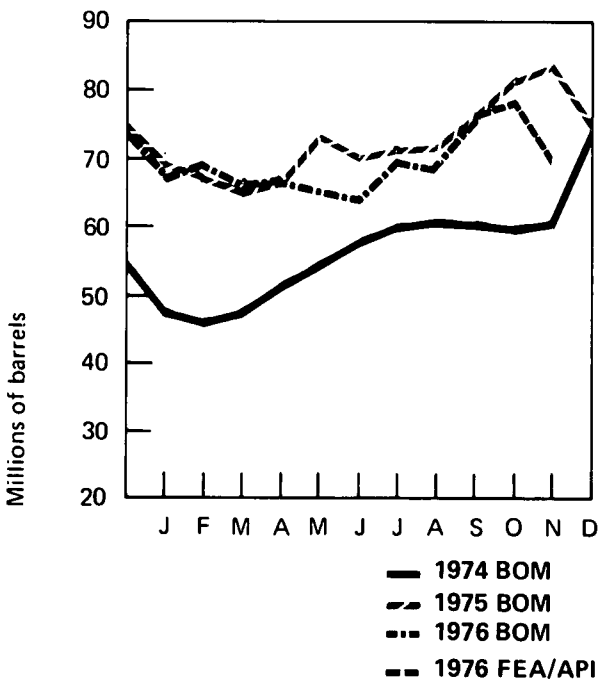
Production



Imports



Stocks

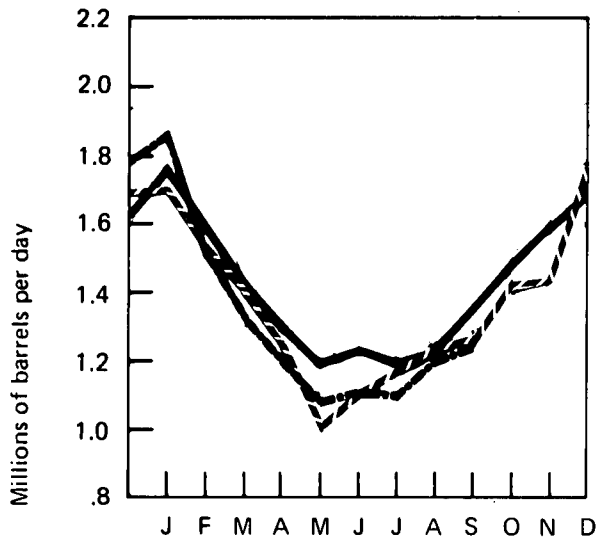


Natural Gas Liquids

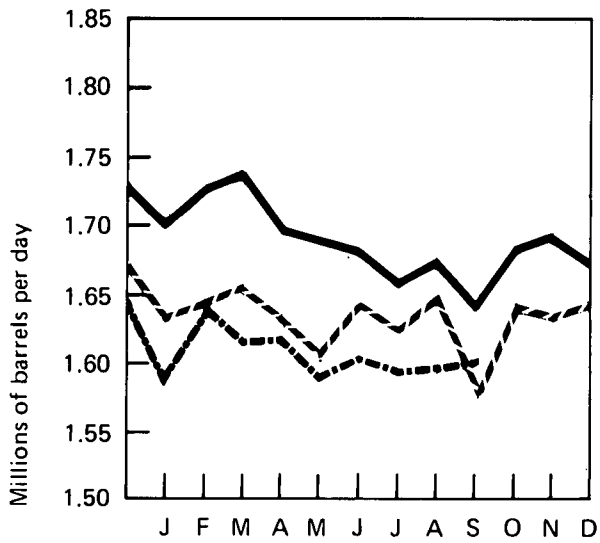
		Domestic Demand*	Production*		Used at Refineries*	Imports	Stocks*
			At processing plants	At refineries			
			Thousands of barrels per day				Thousands of barrels
1974	January	1,778	1,699	327	794	304	91,210
	February	1,593	1,728	337	777	294	90,145
	March	1,408	1,741	341	720	224	94,817
	April	1,321	1,696	353	690	215	101,352
	May	1,180	1,690	340	678	182	110,881
	June	1,242	1,684	368	718	199	117,915
	July	1,187	1,657	364	723	163	125,427
	August	1,221	1,676	361	742	163	131,675
	September	1,360	1,638	348	738	166	133,215
	October	1,493	1,686	330	788	200	130,557
	November	1,604	1,694	301	795	208	124,447
	December	1,692	1,670	286	796	230	114,295
	AVERAGE	**1,422**	**1,688**	**338**	**746**	**212**	
1975	January	1,708	1,630	307	756	257	105,400
	February	1,512	1,646	296	734	181	100,945
	March	1,404	1,658	280	731	178	99,168
	April	1,242	1,635	273	667	176	100,408
	May	1,002	1,607	299	628	97	112,737
	June	998	1,646	323	659	166	125,215
	July	1,191	1,621	336	701	173	131,359
	August	1,227	1,650	357	690	163	137,074
	September	1,278	1,577	326	703	209	140,278
	October	1,429	1,643	310	729	198	138,981
	November	1,444	1,635	309	759	196	135,976
	December	1,787	1,646	310	768	232	124,278
	AVERAGE	**1,352**	**1,633**	**311**	**710**	**186**	
1976	January	1,885	1,585	305	728	240	109,450
	February	1,518	1,640	316	793	270	106,647
	March	1,303	1,615	333	674	194	111,483
	April	1,201	1,616	349	716	171	116,788
	May	1,074	1,588	376	695	144	124,369
	June	1,110	1,606	356	718	163	132,359
	July	1,103	1,592	354	710	147	139,521
	August	1,213	1,596	362	695	160	144,352
	September	1,243	1,601	352	713	152	147,541
	AVERAGE (9 months)	**1,301**	**1,604**	**345**	**713**	**182**	

*See Explanatory Note 5.
Source: Bureau of Mines.

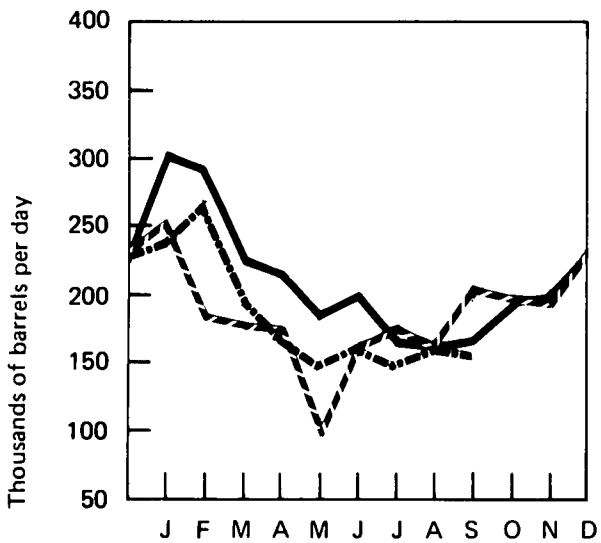
Domestic Demand



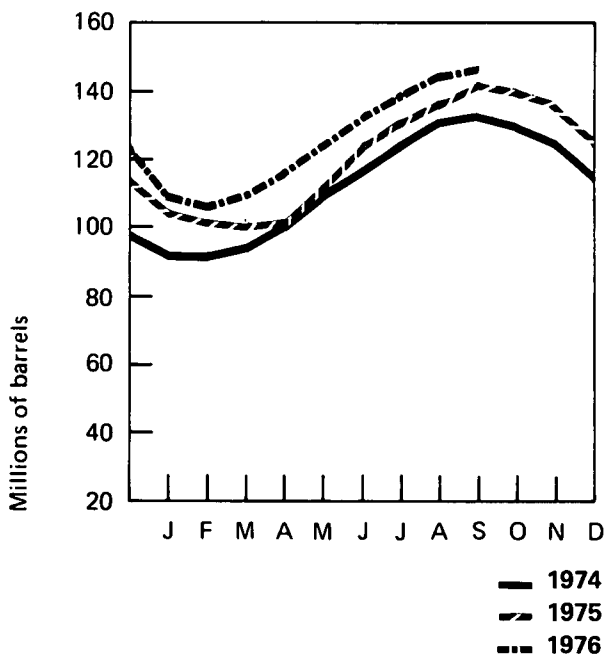
Production at Processing Plants



Imports



Stocks



U.S. Petroleum Supply and Demand—1976

	Actual*			Forecast**
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
	Thousands of barrels per day			
Supply				
Crude oil and lease condensate production	8,194	8,131	8,121	7,947
Natural gas plant liquids production	1,612	1,604	1,596	1,592
Other hydrocarbon supply	37	38	37	36
Crude oil imports	4,520	5,023	5,740	5,612
Refined products imports***	2,140	1,771	1,987	2,040
Total new supply	16,503	16,567	17,481	17,227
Processing gain	485	495	469	488
Stock change—all oils	-797	+363	+1,065	- 395
Total net supply	17,785	16,699	16,885	18,110
Unaccounted for crude oil†	+204	+8	+42	0
Demand				
Crude oil and refined products exports	192	204	220	195
Crude oil losses	14	14	15	13
Domestic demand for refined products††	17,783	16,489	16,692	17,902
Total demand	17,989	16,707	16,927	18,110

*Partially estimated.
**See Explanatory Note 6 for discussion of basic assumptions for forecast.
***Includes plant condensate and unfinished oils.
†Balancing item resulting from statistical inconsistencies.
††Includes international bunkers.
Note: Data for the 3rd and 4th Quarters have been partially revised.
Sources: 1st, 2nd, and 3rd Quarters—BOM; 4th Quarter—FEA forecast.

Natural Gas

Marketed production of natural gas in November was estimated to be about equal to the amount produced in November 1975. Estimated production for the first 11 months of the year was 0.9 percent below the production level for the same months of 1975.

Estimated imports of natural gas in November were 2.5 percent above the November 1975 level. Imports during the first 11 months of 1976 were estimated to be 1.7 percent greater than the import level during the corresponding period of 1975.

Estimated domestic consumption of natural gas in November was 1.2 percent above consumption in November 1975. Estimated consumption for the first 11 months was down 0.4 percent from the consumption level for the same period of 1975.

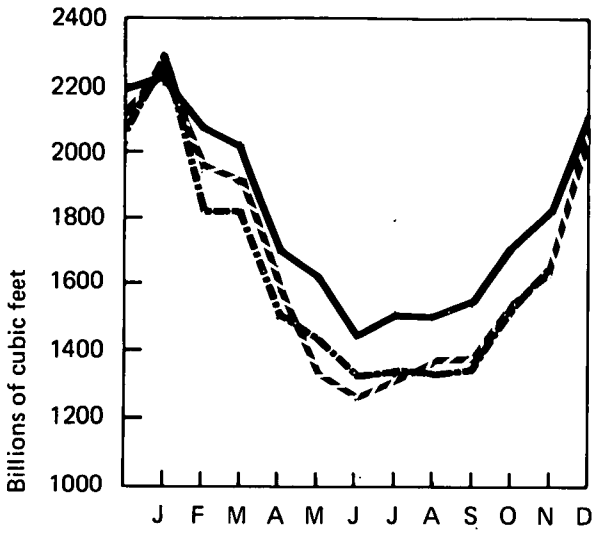
During October, 128 billion cubic feet of natural gas were injected into underground storage reservoirs and 121 billion cubic feet were withdrawn, resulting in net injections of only 7 billion cubic feet, 95 percent below the net volume injected in October 1975. Total gas in underground natural gas storage reservoirs on October 31, 1976, the nominal end of the summer injection season, was 6.03 trillion cubic feet, compared with 5.77 trillion cubic feet on October 31, 1975, an increase of 4.5 percent. There are 377 storage reservoirs in the United States operated by 80 storage operators. The total capacity of these reservoirs at the end of October was 6.65 trillion cubic feet.

Natural Gas

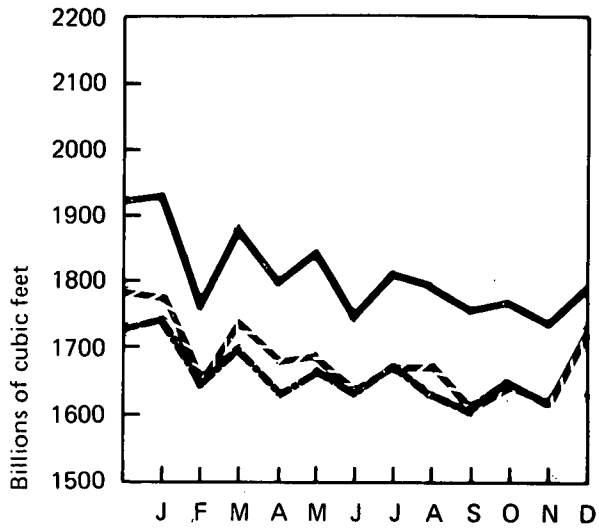
		Domestic Consumption*	Marketed Production*	Domestic Producer Sales to Major Interstate Pipelines	Imports
			Billion cubic feet		
1974	January	2,230	1,928	1,033	86
	February	2,054	1,759	941	79
	March	2,003	1,886	1,027	85
	April	1,691	1,793	987	83
	May	1,608	1,846	981	80
	June	1,439	1,740	928	74
	July	1,514	1,818	947	74
	August	1,510	1,790	932	76
	September	1,537	1,755	870	70
	October	1,706	1,767	936	83
	November	1,827	1,729	921	82
	December	2,104	1,790	959	87
	TOTAL	**21,223** ✓	**21,601**	**11,462**	**959**
1975	January	2,248	1,778	950	81
	February	1,939	1,640	867	75
	March	1,903	1,740	948	83
	April	1,575	1,677	906	82
	May	1,331	1,689	898	80
	June	1,257	1,634	859	76
	July	1,313	1,677	873	80
	August	1,369	1,677	882	75
	September	1,370	1,603	836	74
	October	1,544	1,646	877	80
	November	1,640	1,618	853	81
	December	2,049	1,730	903	86
	TOTAL	**19,538** ✓	**20,109**	**10,652**	**953**
1976	January	2,297	1,745	894	83
	February	1,823	1,641	850	79
	March	1,822	1,709	894	85
	April	1,504	1,633	849	85
	May	1,434	1,668	860	83
	June	R1,327	1,637	815	77
	July	R1,350	1,671	822	R74
	August	R1,330	**1,631	NA	76
	September	R1,350	***1,610	NA	***75
	October	1,530	***1,650	NA	***82
	November	1,660	***1,620	NA	***83
	TOTAL (11 months)	**17,427**	**18,215**	**5,984** (7 months)	**882**

*See Explanatory Note 7.
**Preliminary data.
***Projected data.
R=Revised data. NA=Not available.
Note: All monthly Domestic Consumption data are estimated.
Sources: Consumption, Marketed Production, and Imports—Bureau of Mines; Domestic Producer Sales—Federal Power Commission.

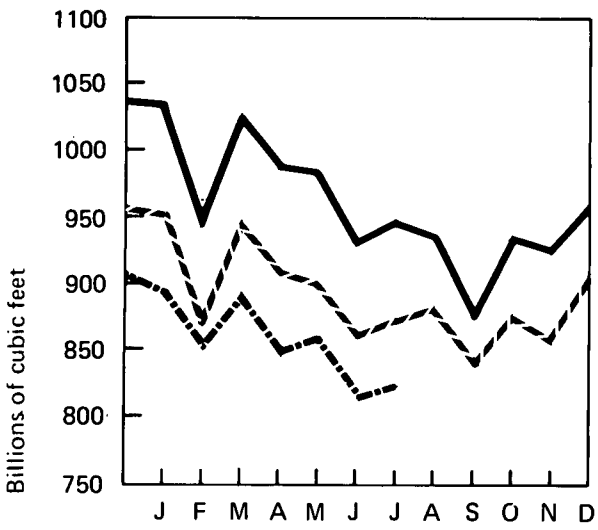
Domestic Consumption



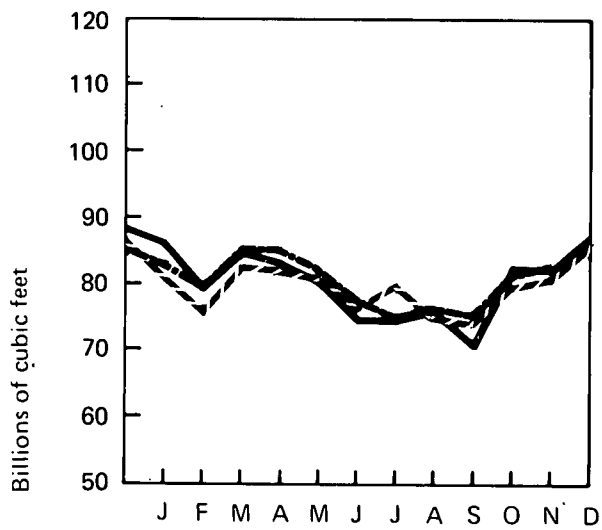
Marketed Production



Domestic Producer Sales to Major Interstate Pipelines



Imports



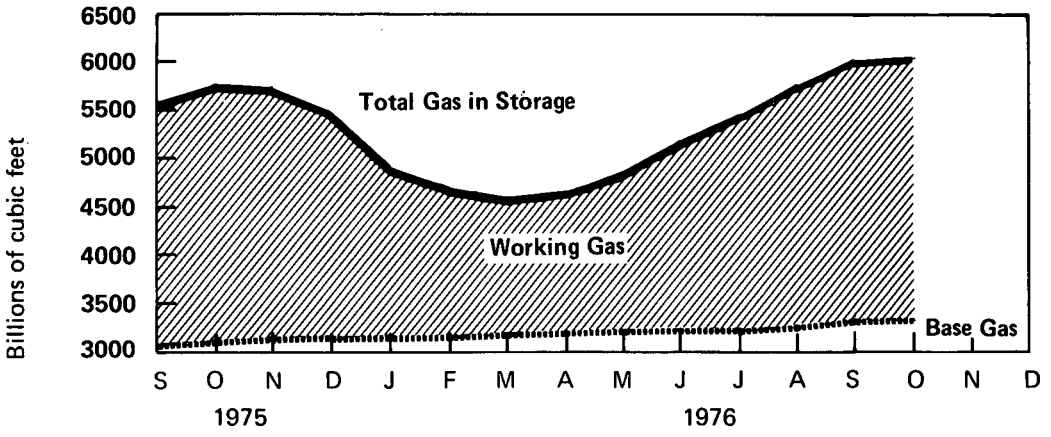
1974
1975
1976

Natural Gas (Continued)

Natural Gas in Underground Storage*

		Total Gas in Storage	Base Gas	Working Gas	Storage Injections	Storage Withdrawals	Net Storage Injections
				Billion cubic feet			
1974	October**	5,445	3,042	2,403	***	***	***
1975	September	5,558	3,084	2,474	232	38	194
	October	5,770	3,128	2,642	185	51	134
	November	5,760	3,172	2,588	99	150	-51
	December	5,423	3,173	2,250	41	394	-353
1976	January	4,868	3,194	1,674	19	630	-611
	February	4,660	3,197	1,463	73	292	-219
	March	4,543	3,195	1,348	85	217	-132
	April	4,650	3,208	1,443	181	68	113
	May	4,878	3,214	1,664	248	23	225
	June	5,163	3,220	1,943	308	19	289
	July	5,476	3,244	2,232	318	19	299
	August	5,759	3,272	2,487	296	15	281
	September	6,021	3,317	2,704	262	20	242
	October	6,030	3,327	2,703	128	121	7

Gas in Storage



*See Explanatory Note 8.
**Data reported as of November 1, 1974.
***Between November 1, 1974, and August 31, 1975, a total of 1,658 billion cubic feet of gas was injected into storage and 1,686 billion cubic feet was withdrawn, for net storage injections of -28 billion cubic feet.
Sources: Federal Energy Administration and Federal Power Commission.

Coal

Production of bituminous coal and lignite for the first 11 months of the year totaled 609.2 million tons, reflecting only a slight increase of 2.4 percent compared with revised 1975 figures for the same period. Approximately 12.4 million tons of production were lost due to work stoppages in July and August (based on the average 1975 production rate of 15.2 tons per man-day).

Coal exports were 49.3 million tons for the period January through October 1976, a decrease of 7.9 percent when compared with the same period in 1975. The primary reason for this large decline is that Japan, one of the largest importers of U.S. coal, has been substituting imports of less expensive coal from Australia.

Domestic consumption of bituminous coal and lignite during the first 9 months of 1976 was 437.0 million tons, an increase of 5.5 percent over the amount consumed during the first 9 months of 1975. Coal usage by electric utilities registered a gain of 29.6 million tons, or 9.9 percent, versus the amount used during the same period in 1975. Consumption by the metallurgical industry, the second largest domestic coal consuming sector, has consistently been greater in 1976 than during the last half of 1975 because of increased U.S. steel production. Steel production was up approximately 10 percent in the first 10 months of 1976 compared with the same period in 1975.

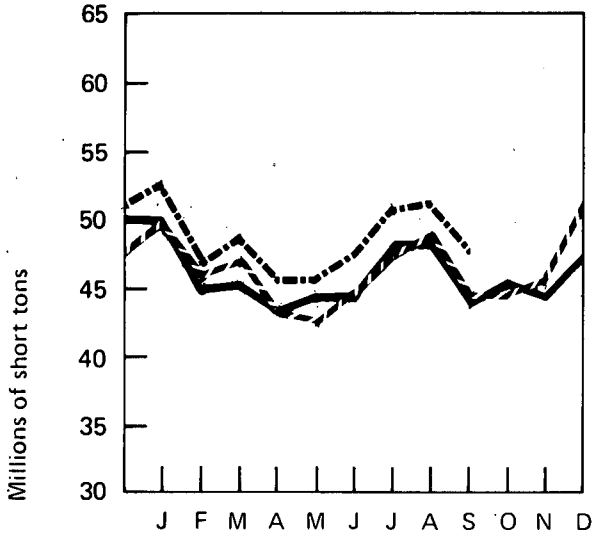
Total stocks of coal held by consumers on July 31, 1976, amounted to 130.0 million tons, with electric utilities accounting for 87.7 percent of the total. Utilities have continued to maintain a relatively high level of coal inventories since the 1974 United Mine Workers' strike.

Bituminous and Lignite

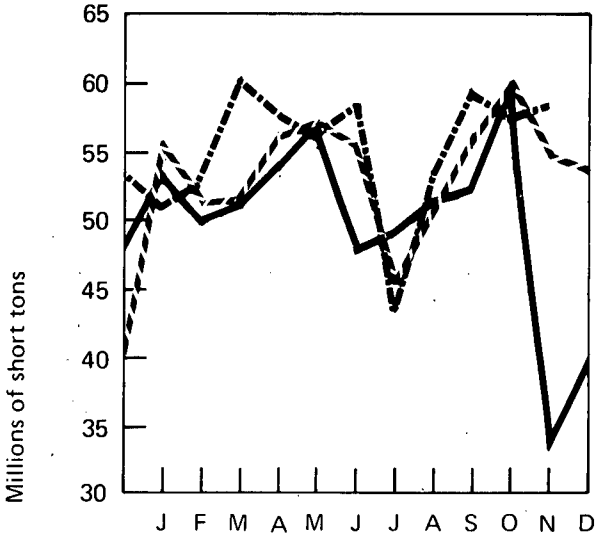
		Domestic Consumption*	Production*	Exports	Stocks
			Thousands of short tons		
1974	January	50,046	53,712	2,813	97,836
	February	44,929	50,053	4,627	95,812
	March	45,858	51,278	3,179	101,568
	April	43,595	54,402	4,944	107,167
	May	44,951	57,662	6,032	112,882
	June	44,315	48,065	6,369	111,935
	July	48,605	49,392	5,307	106,160
	August	48,579	51,808	5,088	105,478
	September	43,844	52,686	4,893	109,173
	October	45,868	60,495	7,342	118,670
	November	44,598	33,702	6,744	109,192
	December	47,521	40,151	2,587	95,528
	TOTAL**	**552,709**	**603,406**	**59,926**	
1975	January	49,841	R55,610	4,254	95,512
	February	45,699	51,135	4,470	97,028
	March	47,202	51,910	5,653	97,832
	April	43,537	R56,330	6,159	102,663
	May	42,658	R57,045	7,011	109,666
	June	R44,777	55,730	6,269	114,857
	July	47,454	45,560	4,691	109,133
	August	49,190	51,160	5,859	108,522
	September	44,032	R56,060	4,529	111,922
	October	44,929	60,030	4,647	120,344
	November	45,946	R54,655	7,593	125,808
	December	51,036	R53,213	4,534	127,115
	TOTAL**	**R556,301**	**R648,438**	**65,669**	
1976	January	52,919	51,495	3,697	119,149
	February	46,800	52,630	3,050	118,970
	March	48,607	60,050	3,979	123,441
	April	45,554	57,850	5,780	128,408
	May	45,675	56,605	5,667	134,621
	June	47,708	58,430	6,569	140,237
	July	R50,925	43,250	4,879	R129,995
	August	***51,398	53,440	4,223	***124,734
	September	***47,401	59,675	5,613	***130,962
	October	NA	57,445	5,871	NA
	November	NA	58,350	NA	NA
	TOTAL	**436,987** (9 months)	**609,220** (11 months)	**49,329** (10 months)	

*See Explanatory Note 9.
**Totals may not add due to rounding.
***FEA estimate based on data provided by Bureau of Mines and Federal Power Commission.
R=Revised data. NA=Not available.
Source: Bureau of Mines.

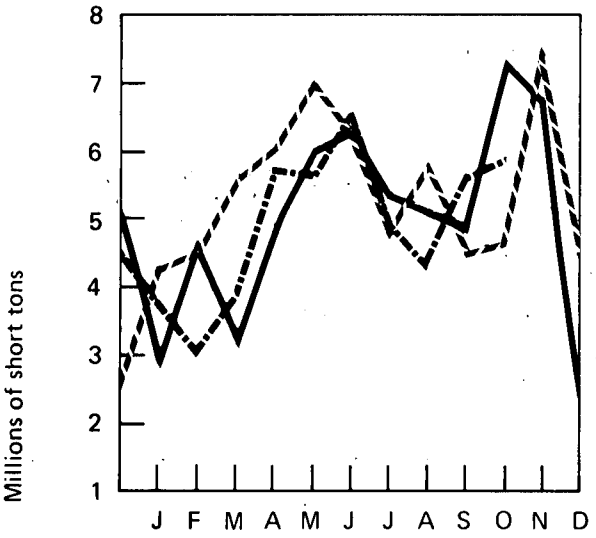
Domestic Consumption



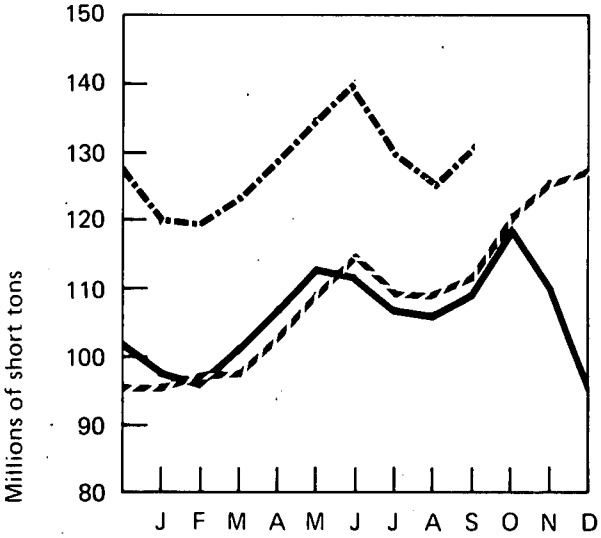
Production



Exports



Stocks

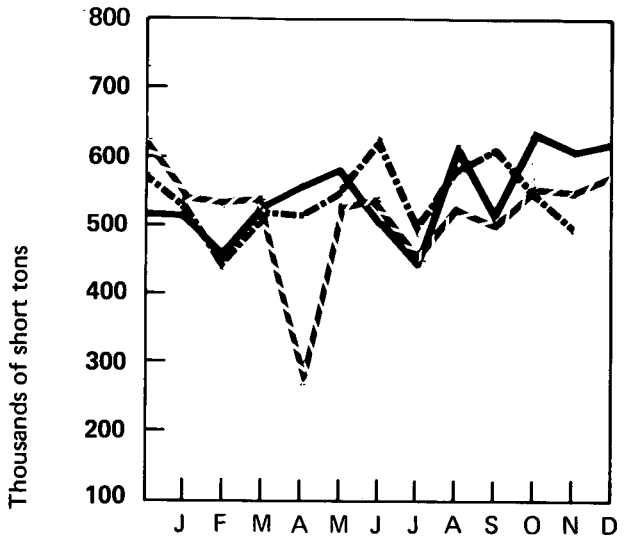


1974
1975
1976

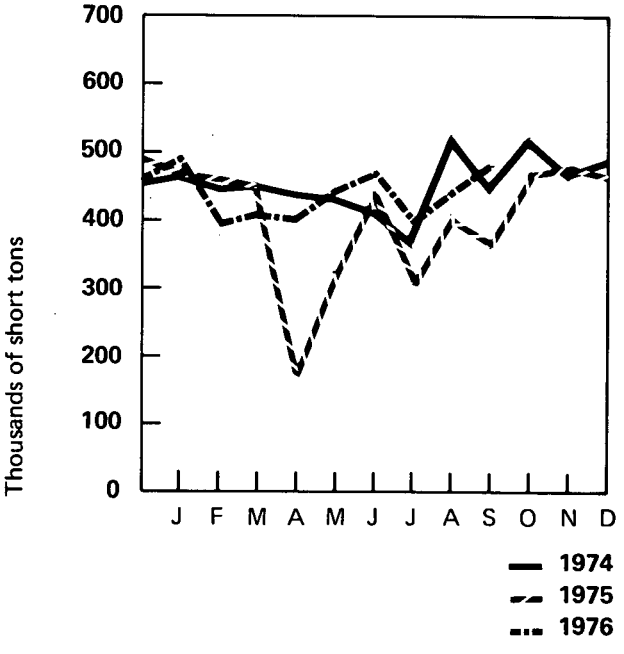
Anthracite

		Production	Apparent Domestic Consumption
		Thousands of short tons	
1974	January	516	466
	February	458	441
	March	531	457
	April	563	437
	May	589	435
	June	505	412
	July	443	360
	August	620	526
	September	516	441
	October	641	522
	November	610	463
	December	625	488
	TOTAL	**6,617**	**5,488**
1975	January	540	475
	February	535	466
	March	544	457
	April	270	164
	May	535	326
	June	544	450
	July	455	305
	August	535	414
	September	500	365
	October	560	478
	November	R555	R484
	December	575	461
	TOTAL	**R6,148**	**R4,845**
1976	January	530	493
	February	440	390
	March	525	416
	April	520	403
	May	555	452
	June	630	478
	July	490	R393
	August	590	445
	September	R615	485
	October	R550	NA
	November	495	NA
	TOTAL	**5,940** (11 months)	**3,955** (9 months)

Production



Apparent Domestic Consumption



NA=Not available.
Sources: Production data are from Bureau of Mines; consumption data are FEA estimates based on figures provided by Bureau of Mines.

Part 5

Electric Utilities

Electric Utilities

November 1976 production of electricity by utilities was an estimated 169.6 billion kilowatt hours, 11.0 percent above the level for November 1975. Estimated production during the first 11 months of 1976 totaled 1,855.7 billion kilowatt hours, up 6.2 percent from the level for the same period in 1975.

Electric utilities consumed 9.3 percent more coal and 4.4 percent more oil during the first 9 months of 1976 than during the corresponding period in 1975. Utility natural gas consumption, however, was 1.8 percent lower.

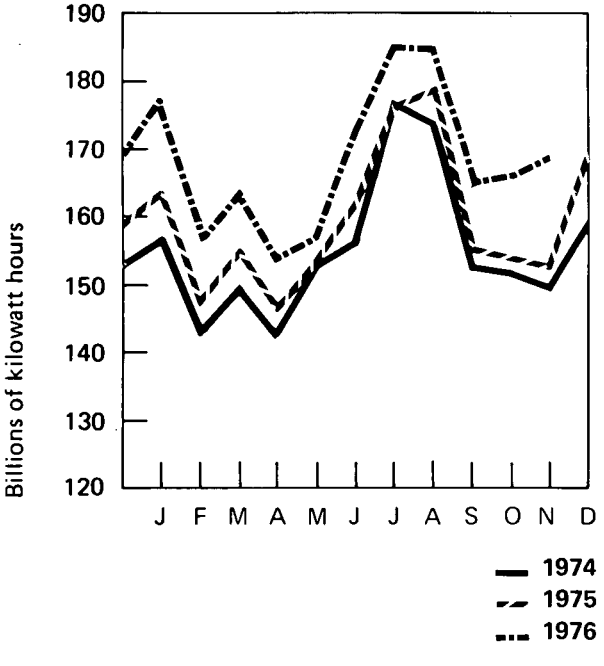
Sales of electricity for the first 9 months of 1976 amounted to 1,376.1 billion kilowatt hours, a 5.2-percent increase over sales for the first 9 months of 1975. This increase was due to greater demand for electricity by commercial and industrial customers. Sales to these two sectors increased 4.8 percent and 10.4 percent, respectively. Although these consumers paid price increases ranging from 5.5 to 7.4 percent over 1975 prices, the potential reductions in power consumption due to these higher prices were more than offset by an increase in the number of customers and the growth in economic activity.

In contrast, sales to residential customers showed almost no change (−0.2 percent) from sales for the same 9-month period of 1975. This is attributed to the balancing effects of higher prices and moderate weather on the one hand, and an increase in the number of customers and the general improvement in economic conditions on the other.

Electric Utilities

		Total Net Production	Percentage Produced from Each Source					
		Millions of kilowatt hours	Coal	Oil	Gas	Nuclear	Hydro-electric	Other*
1974	January	R157,244	46.9	16.6	13.2	4.8	18.4	0.1
	February	R142,462	46.5	15.8	13.3	5.7	18.6	0.1
	March	R150,033	45.2	14.7	15.7	5.9	18.4	0.1
	April	R142,009	44.3	14.0	16.9	5.0	19.6	0.2
	May	R153,501	44.2	14.7	18.5	4.3	18.2	0.1
	June	R156,142	43.3	14.7	20.3	R4.5	R17.1	0.1
	July	R177,976	43.0	15.5	20.9	5.7	14.8	0.1
	August	R173,853	43.1	15.6	20.3	7.1	13.8	0.1
	September	R152,205	42.9	16.4	19.3	R7.3	14.0	R0.1
	October	R151,967	44.2	16.8	18.6	7.1	13.2	0.1
	November	R149,830	44.9	R18.3	15.2	7.3	14.1	R0.2
	December	R159,727	45.5	19.2	12.4	8.3	14.4	0.2
	TOTAL	**R1,866,949**	**AVG. 44.5**	**16.0**	**17.1**	**6.1**	**16.1**	**0.2**
1975	January	R164,320	45.6	18.6	12.0	8.5	15.2	0.1
	February	R147,047	45.8	16.9	12.3	8.6	16.3	0.1
	March	R155,482	44.5	14.9	12.9	R9.6	18.0	R0.1
	April	R146,215	44.1	14.5	13.9	9.1	18.2	0.2
	May	R153,212	R42.2	13.7	16.8	R9.0	18.1	0.2
	June	R162,426	43.3	R14.2	17.7	R7.9	16.7	0.2
	July	R176,812	43.2	14.2	19.3	8.7	14.4	0.2
	August	R179,483	R43.9	15.5	19.0	R8.8	12.6	0.2
	September	R155,209	44.2	13.8	R19.3	R9.3	13.2	0.2
	October	R154,934	44.6	14.2	17.0	9.4	14.6	0.2
	November	R152,784	46.1	R14.1	14.3	R9.3	16.0	0.2
	December	R169,362	46.5	15.9	12.2	R9.9	R15.3	0.2
	TOTAL	**R1,917,286**	**AVG. 44.5**	**R15.1**	**15.6**	**9.0**	**R15.6**	**0.2**
1976	January	178,140	47.0	18.1	11.1	8.9	14.7	0.2
	February	156,703	46.9	15.8	12.2	9.2	15.7	0.2
	March	164,159	46.6	15.5	13.0	8.5	16.2	0.2
	April	153,174	47.4	15.2	14.2	7.2	15.8	0.2
	May	157,216	46.1	13.8	16.1	7.5	16.3	0.2
	June	173,154	44.4	14.5	17.1	9.0	14.8	0.2
	July	185,928	44.7	14.5	17.1	9.5	14.0	0.2
	August	185,812	45.0	15.0	16.9	10.1	12.8	0.2
	September	R165,086	45.6	14.4	17.0	10.5	12.3	0.2
	October	166,780	NA	NA	NA	10.9	NA	NA
	November	169,592	NA	NA	NA	9.5	NA	NA
	TOTAL (11 months)	**1,855,744**						

Total Net Production



*Includes electricity produced from geothermal power, wood, and waste.

NA=Not available.

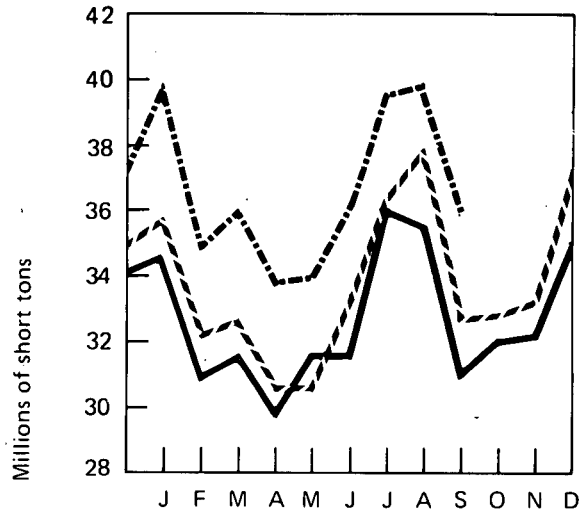
Sources: Federal Power Commission; data for latest 2 months are from Edison Electric Institute and U.S. Nuclear Regulatory Commission.

Fuel Consumption

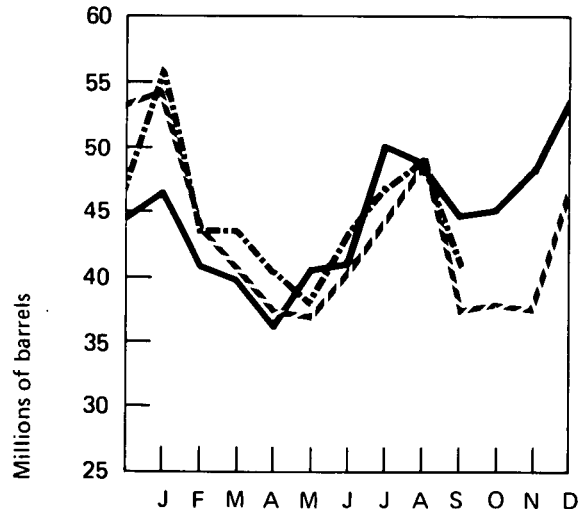
		Coal	Oil	Gas
		Thousands of short tons	Thousands of barrels	Millions of cubic feet
1974	January	34,606	46,731	219,320
	February	30,864	40,660	201,613
	March	31,645	39,636	253,835
	April	29,683	35,957	259,309
	May	31,707	40,820	306,987
	June	31,726	41,237	346,618
	July	36,120	50,165	403,456
	August	35,558	48,985	380,653
	September	30,982	44,553	313,018
	October	32,129	45,267	298,328
	November	32,218	48,562	238,890
	December	35,185	53,648	207,072
	TOTAL	**392,423**	**536,221**	**3,429,099**
1975	January	35,843	54,180	204,591
	February	32,097	43,670	188,448
	March	32,793	40,542	210,203
	April	30,547	37,132	213,742
	May	30,574	37,076	273,922
	June	33,456	41,026	306,800
	July	36,567	44,507	360,536
	August	37,967	49,312	359,275
	September	32,609	37,119	315,123
	October	32,853	38,115	274,225
	November	33,333	37,626	227,102
	December	37,390	46,935	212,924
	TOTAL	**406,029**	**507,240**	**3,146,891**
1976	January	39,978	56,186	204,944
	February	34,958	43,230	198,117
	March	36,079	43,946	221,152
	April	33,799	40,262	226,433
	May	33,943	37,930	264,941
	June	36,374	43,532	310,186
	July	39,672	47,070	335,021
	August	39,948	48,509	336,612
	September	35,961	40,954	292,653
	TOTAL (9 months)	**330,712**	**401,619**	**2,390,061**

Note: Most data for 1974 and 1975 have been revised.
Source: Federal Power Commission.

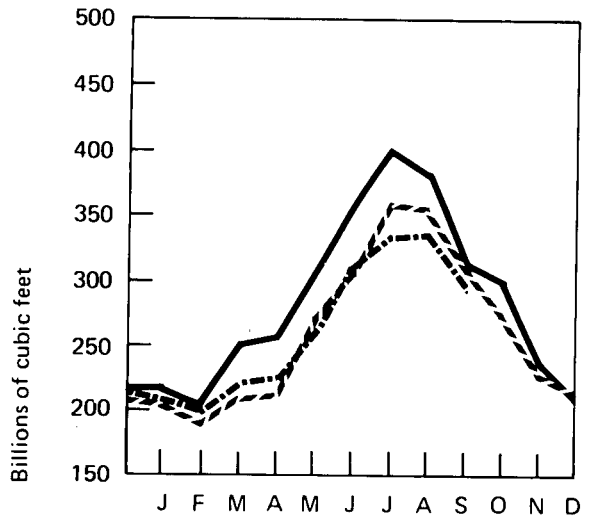
Coal Consumption



Oil Consumption



Gas Consumption

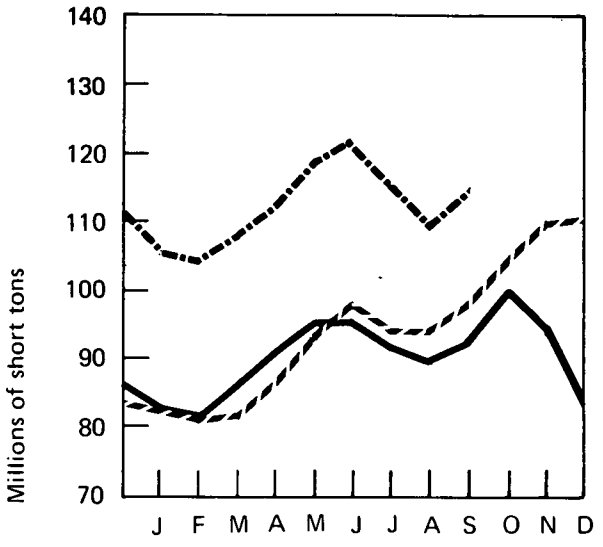


1974
1975
1976

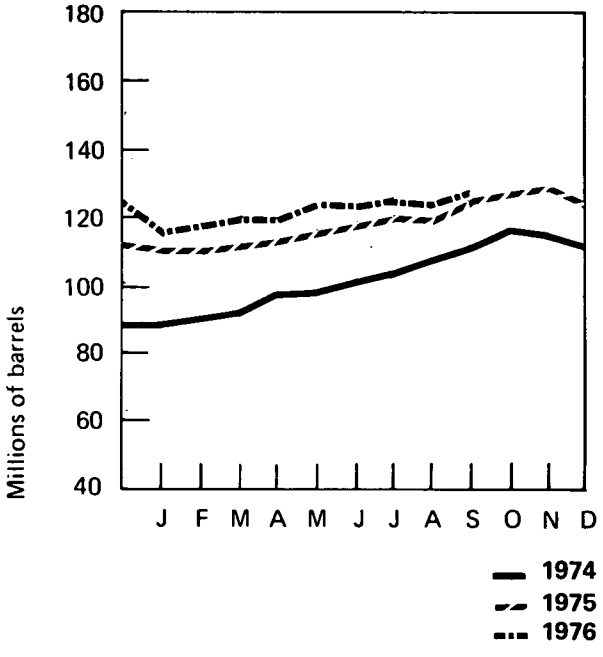
Electric Utilities (Continued)

		Stocks at End of Month	
		Coal	Oil
		Thousands of short tons	Thousands of barrels
1974	January	82,549	89,475
	February	81,734	91,659
	March	86,178	93,886
	April	91,036	98,058
	May	95,625	99,598
	June	95,918	102,402
	July	91,547	105,640
	August	89,502	109,681
	September	92,998	112,509
	October	100,536	118,034
	November	94,189	117,389
	December	83,542	112,901
1975	January	82,088	111,280
	February	80,972	111,484
	March	81,885	113,627
	April	86,829	114,283
	May	93,869	117,216
	June	98,031	118,921
	July	94,278	121,224
	August	94,213	120,600
	September	98,096	126,224
	October	105,415	128,766
	November	110,313	130,216
	December	110,750	125,033
1976	January	105,508	117,732
	February	104,862	118,646
	March	108,431	120,069
	April	112,841	120,158
	May	119,518	125,668
	June	122,875	125,482
	July	115,160	126,189
	August	109,133	125,520
	September	115,391	129,714

Coal Stocks



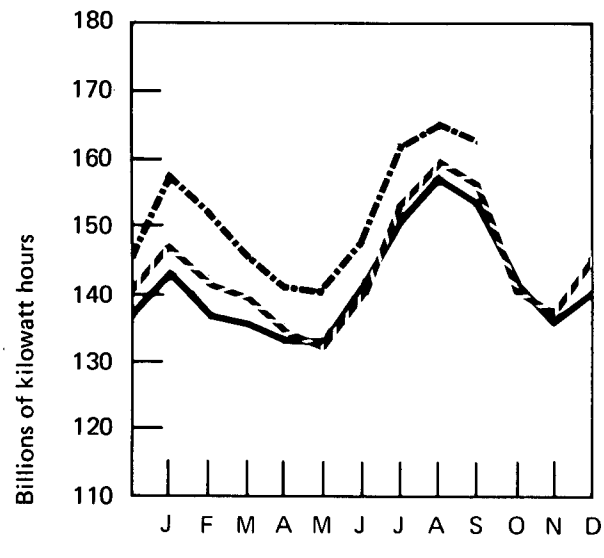
Oil Stocks



Note: Data for 1974 and 1975 have been revised.
Source: Federal Power Commission.

		Sales				
		Residential	Commercial	Industrial	Other*	Total
		Millions of kilowatt hours				
1974	January	52,878	30,647	55,457	5,004	143,986
	February	47,779	29,563	54,799	4,596	136,737
	March	46,096	29,345	55,814	4,697	135,952
	April	43,193	29,089	56,115	4,610	133,007
	May	41,105	30,061	57,226	4,685	133,077
	June	46,597	32,989	57,702	4,643	141,931
	July	53,541	35,498	57,503	4,969	151,511
	August	56,699	36,702	59,641	5,070	158,112
	September	52,948	35,801	59,893	4,977	153,619
	October	44,164	32,275	60,116	4,800	141,355
	November	42,671	30,986	57,157	4,952	135,784
	December	50,512	31,868	53,433	5,039	140,852
	TOTAL	**578,183**	**384,824**	**684,874**	**58,042**	**1,705,923**
1975	January	54,003	32,405	55,505	5,954	147,867
	February	50,219	31,459	54,328	5,544	141,550
	March	47,968	31,194	54,437	5,639	139,238
	April	44,762	30,473	53,910	5,269	134,414
	May	41,077	30,926	54,767	5,404	132,174
	June	45,766	35,210	55,369	5,384	141,729
	July	R54,586	R38,031	R55,645	R5,668	R153,930
	August	59,979	38,768	56,067	5,223	160,037
	September	56,983	37,550	56,797	5,320	156,650
	October	45,142	33,329	56,486	5,194	140,151
	November	44,019	32,288	56,174	5,235	137,716
	December	51,900	33,183	55,532	5,357	145,972
	TOTAL	**R596,404**	**R404,816**	**R665,017**	**R65,191**	**R1,731,428**
1976	January	60,091	34,833	57,448	6,380	158,752
	February	54,264	33,583	58,228	5,874	151,949
	March	47,060	32,273	60,516	5,990	145,839
	April	43,551	31,598	60,106	5,407	140,662
	May	41,036	32,347	61,271	5,478	140,132
	June	44,157	35,707	62,419	5,344	147,627
	July	R54,314	R39,455	R62,877	R5,895	R162,541
	August	56,311	40,898	62,444	5,999	165,652
	September	53,746	40,141	62,968	6,096	162,951
	TOTAL (9 months)	**454,530**	**320,835**	**548,277**	**52,463**	**1,376,105**

Total Sales



*Includes street lighting and trolley cars.
Source: Federal Power Commission; data for latest 2 months are from Edison Electric Institute.

Nuclear Power

The 54 domestic reactors in commercial operation, with a maximum dependable capacity of 36,010 megawatts, performed at 59 percent of capacity during November. Nineteen reactors (13,200 megawatts) were inoperable for more than 200 hours during the month because of outages for refueling and system maintenance. For the period June through October 1976, the Nation's reactors operated at 65 percent of capacity, compared with 57 percent and 60 percent during the similar periods of 1974 and 1975, respectively.

In Great Britain, Hinkley Point-B, a 600-megawatt advanced gas reactor, began start-up testing. British nuclear capacity now totals 7,560 megawatts (31 reactors), or about 11 percent of the national electrical generating capacity. In Japan, Mihama 3, an 826-megawatt pressurized-water reactor, was officially commissioned, bringing total nuclear capacity in that country to 7,430 megawatts (13 reactors), or about 8 percent of total electrical generating capacity. France currently operates 10 reactors (3,070 megawatts) as does West Germany (6,410 megawatts). Nuclear power represents approximately 7 percent and 11 percent, respectively, of total electrical generating capacity in those countries.

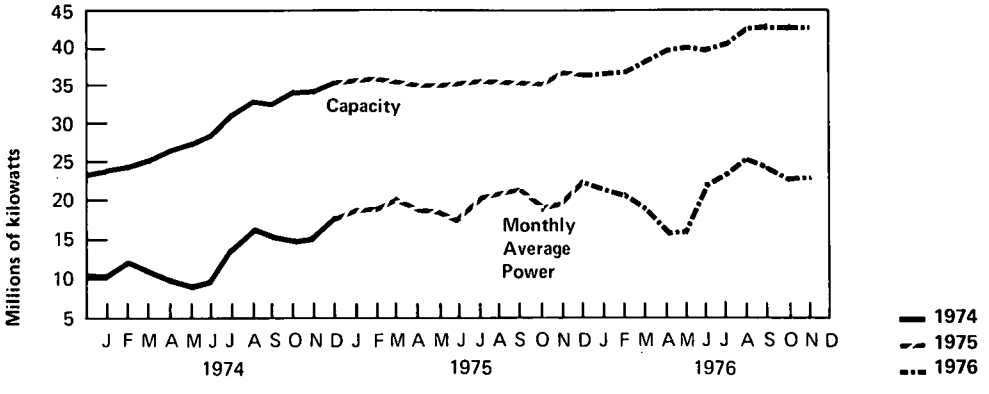
In early December, the Nuclear Regulatory Commission (NRC) announced that nuclear powerplant licensing will be resumed on an interim basis in January 1977, lifting the 4-month-old moratorium. Immediately affected would be three new reactors (2,756 megawatts) ready to begin commercial operation, and eight reactors (9,600 megawatts) awaiting limited work authorization (LWA, see definitions) or construction permits.

In late October, President Ford declared that reprocessing is no longer a necessary step in the nuclear fuel cycle, and that recycling of plutonium as a fuel should only proceed if the world community can effectively overcome the associated risks of nuclear proliferation. In his policy statement, the President also proposed that all nuclear supplier nations refrain from exporting enrichment and reprocessing technology for at least 3 years, and instead provide consumer nations with long-term contracts for complete nuclear fuel services. The 3-year pause would allow international discussion to continue on the problems of plutonium reprocessing and recycling in general and on future sales of the critical technologies.

U.S. Nuclear Powerplant Operations*

		Maximum Dependable Capacity	Average Power	Percent of Total Domestic Electricity Generation
		Thousands of net kilowatts		
1974	January	24,006	R10,219	4.8
	February	24,776	R12,077	5.7
	March	25,305	R11,797	5.9
	April	26,862	R9,901	5.0
	May	27,670	R8,820	4.3
	June	28,748	R9,833	R4.5
	July	31,374	R13,723	5.7
	August	33,045	R16,577	7.1
	September	32,609	R15,292	R7.3
	October	34,464	R14,602	7.1
	November	34,480	R15,283	7.3
	December	35,317	R17,860	8.3
	AVERAGE	**29,921**	**R13,011**	**6.1**
1975	January	35,691	R18,739	8.5
	February	35,899	R18,912	8.6
	March	35,686	R20,016	R9.6
	April	35,017	R18,521	9.1
	May	35,017	R18,488	R9.0
	June	35,322	R17,699	R7.9
	July	35,596	R20,677	8.7
	August	35,589	R21,102	R8.8
	September	35,540	R19,933	R9.3
	October	35,540	R18,657	9.4
	November	36,752	R19,671	R9.3
	December	36,424	R22,417	R9.9
	AVERAGE	**35,671**	**R19,672**	**9.0**
1976	January	36,750	21,315	8.9
	February	36,879	20,605	9.2
	March	38,072	18,816	8.5
	April	39,763	15,238	7.2
	May	39,902	15,899	7.5
	June	39,781	21,799	9.0
	July	40,168	23,662	9.5
	August	42,067	25,136	10.1
	September	42,896	R24,108	R10.5
	October	R42,877	**24,465	**10.9
	November	**42,877	**22,379	** 9.5
	AVERAGE (11 months)	**40,362**	**21,182**	**9.2**

U.S. Nuclear Powerplants



*Includes all units licensed to operate, whether in commercial operation or power ascension status.
**Preliminary data.
R=Revised data.
Sources: Average Power for latest 2 months and Capacity are from U.S. Nuclear Regulatory Commission; Percent of Total Domestic Electricity Generation for latest 2 months is based on data from Edison Electric Institute; remaining data are from Federal Power Commission.

Status of Nuclear Powerplants – November 30, 1976

Status	Number of Plants					Design Capacity
	Boiling Water Reactors	High Temperature Gas Reactors	Pressurized Water Reacters	Other*	Total	Net Electrical Megawatts
Licensed to operate	24	1	37	0	62	45,000
Construction permit granted	20	0	52	0	72	76,000
Construction permit pending	21	0	41	5	67	74,000
Orders placed for plant	3	0	13	0	16	18,000
Publicly announced	–	–	–	19	19	23,000
TOTAL	**68**	**1**	**143**	**24**	**236**	**236,000**

*Includes 1 Liquid Metal Fast Breeder Reactor and 23 announced intentions to order for which a reactor type has not been chosen.
Source: U.S. Nuclear Regulatory Commission.

U.S. Uranium Enrichment – November 1976

	Domestic Customers	Foreign Customers	Total
Separative Work Performed (in metric tons of separative work units)	220.619	501.823	722.442
Cost (in millions of dollars)	11.525	31.636	46.161
Product Quantity (in metric tons of uranium)	46.222	134.488	180.710
Feed Requirement (in metric tons of uranium)	272.443	666.443	938.886

Source: U.S. Energy Research and Development Administration.

Nuclear Power Generation by Major Non-Communist Countries – November 1976*

Country	Number of Reactors	Capacity	Generation of Electricity			
			Generation	Percent of Design Capacity		
			November	November	Year	
					1974	1975
		Thousands of gross electrical kilowatts	Millions of gross kilowatt hours			
Canada	6	3,130	1,476	66	74	64
Federal Republic of Germany	10	6,410	2,194	48	57	72
France	10	3,070	1,125	51	57	68
Great Britain	31	7,560	3,159	58	61	57
India	3	620	352	79	55	46
Italy	3	630	365	80	61	69
Japan	13	7,430	2,821	53	61	36
Spain	3	1,120	713	88	75	77
Sweden	5	3,310	1,213	51	20	44
Switzerland	3	1,050	722	95	76	84
United States	59	43,200	16,918	54	57	60
TOTAL	**146**	**77,530**	**31,058**	**56**	**58**	**58**

*Includes only operational units, i.e., those which have generated electricity during, or prior to, the current month.
Source: *Nucleonics Week.*

Summary of Monthly Nuclear Fuel Cycle – October 1976

Fuel Cycle Activity	Product	Processed Material*	Percent Utilization of Industry Capacity	Energy Content of Processed Material**	Energy Consumed in Fuel Cycle Activity***	Cost Contribution to Electric Power†
		MTU except where noted		Billion Btu		Mills per kilowatt hour
Milling	Yellowcake (U_3O_8) Deliveries	1,371	100	472,000	770	1.27
Conversion	Uranium Hexafluoride (UF_6) Deliveries	1,404	97	487,000	300	0.16
Enrichment	Enriched UF_6 Deliveries	275 (1,022 MT-SWU)	††	570,000	6,680	1.53
Fabrication	Finished Fuel Assemblies Shipped	82	34	15,400	11	0.47
Powerplant Operation	Electricity Generated	18,270 (million kWhe)	57	194,000	842 (million kWhe)	10.93
	Spent Fuel Discharged	NA	–	–	–	
Reprocessing	Spent Fuel Received	0	–	–	–	††† 1.57
	Spent Fuel Reprocessed	0	–	–	–	

*Units of measure are discussed in Explanatory Notes 10 and 11.
**Assumes 25,000 MWD/MTU for heat content of enriched uranium and a 6.1 feed to product ratio at the enrichment plant.
***Energy requirements for processing are obtained from U.S.A.E.C. Report No. WASH 1248.
†Cost contribution is computed from unit prices paid for current month's production and requirement for a model 1000 MWe reactor operating at 65 percent capacity factor. Because of the long lead time required for nuclear fuel processing, the sum of numbers in this column does not necessarily reflect the fuel cost of current electricity production.
††ERDA's enrichment plans are presently operating at maximum utilization of available electric power, with the excess production being placed in the "Preproduction stockpile" in anticipation of high demand for enriched uranium in the 1980's.
†††Figure represents current industry estimate for cost of spent fuel shipment, reprocessing, and waste deposition, exclusive of cost credits for recovered uranium and plutonium.
NA=Not available.
Source: ERDA.

Energy Consumption

Domestic energy consumption in October 1976 totaled 5.974 quadrillion Btu, 2.6 percent more than for October 1975, but 1.5 percent below consumption for October 1974. The sectoral breakdown for October is not yet available.

The revised consumption total for September was 5.678 quadrillion Btu, up 4.9 percent from the total for September 1975 and up 1.4 percent from the level for the same month in 1974. The combined residential/commercial sector consumed 1.876 quadrillion Btu, 2.5 percent more than in September 1975 and 5.0 percent more than in September 1974. The industrial sector used 2.242 quadrillion Btu, 6.3 percent above the September 1975 total, but 4.9 percent below the September 1974 total. Transportation accounted for 1.559 quadrillion Btu, an increase of 5.8 percent and 7.3 percent over the levels for September 1975 and September 1974, respectively.

Consumption in the residential/commercial sector was 28.6 percent petroleum, 14.4 percent natural gas, 0.7 percent coal, and 56.3 percent electricity. Industrial energy consumption was 21.8 percent petroleum, 34.5 percent natural gas, 30.2 percent electricity, and 13.5 percent coal. Transportation energy consumption was 96.5 percent petroleum. Sources of energy used for electricity generation were petroleum, 14.3 percent; natural gas, 17.2 percent; coal, 45.2 percent; hydroelectric, 12.7 percent; and nuclear power, 10.6 percent.

Petroleum Consumption and Forecast*

Total domestic demand for petroleum products during November 1976 was 18.24 million barrels per day. This was 3.5 percent above the forecast level, 16.0 percent above the November 1975 level, and 5.1 percent above the level for November 1974.

The large increase over November 1975 consumption was concentrated in distillate and residual fuel oils. This was due in part to increased demand for heating oil because of much colder weather. (See the heating degree-days section.) Demand for distillate in November was 3.40 million barrels per day, 2.5 percent above the forecast level, 33.8 percent above the November 1975 level, and 7.8 percent above November 1974 demand. November demand for residual was 2.84 million barrels per day, 9.4 percent greater than the forecast level and 21.0 percent greater than November 1975 demand, but 3.2 percent below demand for November 1974. Combined demand for distillate and residual in November was 27.6 percent higher than the level for November 1975, but only 2.5 percent above demand during November 1974.

Motor gasoline also played a significant role in petroleum consumption during November. Gasoline consumption was 6.99 million barrels per day, 2.4 percent more than the forecast level, 9.5 percent more than in November 1975, and 6.8 percent more than in November 1974.

Energy Indicators**

U.S. Dependence on Petroleum Imports

U.S. Dependence on Petroleum Imports has increased markedly since 1970, when imports constituted 21 percent of domestic petroleum requirements. During the first 3 quarters of 1976, imports accounted for 41 percent of petroleum demand. Dependence on imports from Arab countries has increased at a more rapid rate, from 3 percent of demand in 1970 to 16 percent during the first 3 quarters of 1976.

Energy Consumption per GNP Dollar

The index of Energy Consumption per GNP Dollar has not changed significantly during the last 7 years, ranging between a high of 62.45 thousand Btu per GNP dollar in the last quarter of 1970 to a low of 58.33 thousand in the first quarter of 1974 during the Arab oil embargo.

Consumer Energy Price Indicator

The Consumer Energy Price Indicator shows that energy costs to the consumer have increased 66 percent since the third quarter of 1973, compared with an overall cost-of-living increase of 28 percent, as measured by the Consumer Price Index. However, for the period October 1975 to October 1976, both indices show the same increase of 5 percent.

*See Explanatory Note 6.

**See Explanatory Notes 13 through 15.

Energy Consumption

Domestic Energy Consumption by Primary Energy Type
[Quadrillion (10^{15}) Btu]

		Coal*	Natural Gas (dry)	Petroleum	Hydroelectric Power**	Nuclear Electric Power	Total	Cumulative Total
1972	**TOTAL**	**12.424**	**22.984**	**32.965**	**2.946**	**0.567**	**71.895**	
1973	January	1.191	2.397	3.200	0.285	0.067	7.140	7.140
	February	1.070	2.171	2.950	0.254	0.063	6.507	13.647
	March	1.073	2.057	2.944	0.281	0.071	6.426	20.073
	April	1.021	1.874	2.635	0.265	0.063	5.857	25.930
	May	1.045	1.765	2.843	0.272	0.061	5.987	31.917
	June	1.079	1.566	2.728	0.262	0.072	5.707	37.625
	July	1.138	1.591	2.800	0.248	0.074	5.851	43.475
	August	1.166	1.615	2.993	0.235	0.083	6.092	49.567
	September	1.087	1.559	2.757	0.193	0.082	5.678	55.245
	October	1.111	1.744	2.942	0.204	0.080	6.080	61.325
	November	1.116	1.945	3.061	0.223	0.087	6.431	67.756
	December	1.197	2.228	2.999	0.287	0.086	6.797	74.553
	TOTAL	**13.294**	**22.512**	**34.852**	**3.006**	**0.888**	**74.553**	
1974	January	1.166	2.284	2.951	0.314	0.081	6.795	6.795
	February	1.048	2.103	2.677	0.290	0.087	6.205	13.000
	March	1.070	2.051	2.749	0.300	0.094	6.263	19.263
	April	1.017	1.732	2.631	0.303	0.076	5.759	25.022
	May	1.048	1.647	2.684	0.304	0.070	5.753	30.775
	June	1.033	1.474	2.662	0.290	0.075	5.534	36.309
	July	1.130	1.550	2.791	0.287	0.109	5.867	42.176
	August	1.134	1.546	2.825	0.263	0.131	5.900	48.076
	September	1.023	1.574	2.647	0.236	0.117	5.597	53.673
	October	1.071	1.747	2.910	0.222	0.116	6.066	59.739
	November	1.041	1.871	2.866	0.233	0.117	6.128	65.867
	December	1.109	2.154	3.075	0.253	0.142	6.733	72.599
	TOTAL	**12.889**	**21.732**	**33.468**	**3.295**	**1.215**	**72.599**	
1975	January	1.162	2.302	3.069	0.274	0.149	6.956	6.956
	February	1.066	1.986	2.659	0.262	0.135	6.108	13.064
	March	1.101	1.949	2.785	0.305	0.159	6.298	19.362
	April	1.009	1.613	2.650	0.291	0.142	5.704	25.065
	May	0.992	1.363	2.580	0.302	0.147	5.384	30.450
	June	1.044	1.287	2.579	0.296	0.136	5.342	35.792
	July	1.103	1.345	2.690	0.279	0.164	5.581	41.372
	August	1.145	1.402	2.691	0.249	0.167	5.655	47.027
	September	1.025	1.403	2.605	0.227	0.153	5.413	52.440
	October	1.049	1.581	2.790	0.249	0.156	5.825	58.265
	November	1.072	1.679	2.597	0.268	0.151	5.767	64.032
	December	1.189	2.098	3.070	0.284	0.178	6.819	70.851
	TOTAL	**12.955**	**20.007**	**32.766**	**3.285**	**1.837**	**70.851**	
1976	January	1.233	2.352	3.175	0.285	0.169	7.215	7.215
	February	1.090	1.867	2.783	0.269	0.153	6.161	13.376
	March	1.132	1.866	2.953	0.291	0.149	6.390	19.766
	April	1.061	1.540	2.754	0.265	0.117	5.737	25.504
	May	1.065	1.468	2.727	0.280	0.126	5.666	31.170
	June	1.113	1.359	2.781	0.280	0.167	5.700	36.870
	July	1.185	1.382	2.836	0.284	0.188	5.875	42.745
	August	1.197	1.362	2.841	0.262	0.200	5.861	48.606
	September	1.106	1.382	2.779	0.225	0.185	5.678	54.284
	October***	1.142	1.567	2.832	0.239	0.194	5.974	60.258
	TOTAL (10 months)	**11.324**	**16.146**	**28.460**	**2.681**	**1.648**	**60.258**	

*Includes bituminous coal, lignite, and anthracite coal.
**Includes utility production, industrial production, and net imports.
***Partially estimated.

Energy Consumption by Economic Sector and Primary Source – September 1976 [Quadrillion (10^{15}) Btu]

Sector[1]	Primary Energy Source					Primary Energy Consumption	Electricity Distributed[7]	Net Energy Consumption	Electrical Energy Loss Distributed[8]	Ultimate Energy Disposition
	Coal[2]	Natural Gas (dry)[3]	Petroleum[4]	Hydroelectric[5]	Nuclear[6]					
Residential and Commercial	0.013	0.271	0.536	–	–	0.820	0.336	1.156	0.721	1.876
Industrial	0.302	0.773	0.489	0.003	–	1.567	0.215	1.781	0.461	2.242
Transportation	0.001	0.038	1.504	–	([9])	1.543	0.005	1.548	0.011	1.559
Electric Utilities	0.790	0.300	0.250	0.222	0.185	1.749	–	–	–	–
TOTAL	**1.106**	**1.382**	**2.779**	**0.225**	**0.185**	**5.678**	**0.556**	**4.485**	**1.193**	**5.678**

[1] See Explanatory Note 12 for definitions of the Residential and Commercial, Industrial, Transportation, and Electric Utilities Sectors.

[2] Data are from the Bureau of Mines. Includes anthracite and bituminous coal and lignite.

[3] Aggregate data are from the Bureau of Mines. FPC provided data on natural gas consumed by electric utilities. Data from the American Gas Association are used for the Residential and Commercial Sector, adjusted to include a portion of the AGA "Other" category. Natural gas used in transportation, mostly for pipeline use, is estimated to be 3.5 percent of total natural gas consumption less electric utilities. This percentage is derived from 1974 Bureau of Mines data on consumption. The Industrial Sector is then the difference between the total and the sum of the other sectors.

[4] Aggregate petroleum data are from the Bureau of Mines. FPC provided data on oil consumed by electric utilities. Petroleum consumed in transportation was calculated based on Department of Transportation data as follows: Motor gasoline - 100 percent; naphtha jet fuel - 100 percent; kerosene jet fuel - 97 percent; distillate fuel oil - 30.3 percent; residual fuel oil - 11.2 percent; all other products - 4.7 percent. The remainder is distributed to economic sectors using the following percentage shares, derived from 1974 Bureau of Mines data on consumption: Residential and Commercial - 52.3 percent; Industrial - 47.7 percent.

[5] FPC hydroelectric power production plus net imports of electricity from Canada. These imports, estimated at 0.011 quadrillion Btu per month, were assumed to be from hydroelectric power sources. Monthly industrial hydroelectric power consumption is estimated to be one-twelfth of the preliminary Bureau of Mines annual figure for 1975.

[6] FPC nuclear power production.

[7] Electricity was distributed using Edison Electric Institute data on kilowatt-hour sales to ultimate customers. Electrical energy consumed by railroads and for street and highway lighting was distributed to the Transportation Sector. All "other" sales, largely for use in government buildings, were distributed to the Residential and Commercial Sector.

[8] In generating electricity with nuclear or fossil fuels, approximately 65 percent of the energy is lost in the form of heat. Transmission and distribution losses consume about an additional 3 percent of the energy inputs of the utility industry. In order to fully account for all energy consumed both directly and indirectly (i.e., ultimate energy disposition), the electricity losses are allocated to the final end-use sectors in proportion to their direct kilowatt-hour usage.

[9] Negligible.

Energy Consumption (Continued)

Percent Changes in Energy Consumption for September 1976 by Sources and Economic Sectors

	September 1976 Consumption	Percent Change from September 1975	Cumulative Percent Change from 1975 (January through September)*
	Quadrillion Btu		
Refined Petroleum Products	2.779	+6.7	+5.0
Motor Gasoline	1.115	+5.2	+4.2
Jet Fuel	0.176	+0.8	-1.9
Distillate	0.457	+21.0	+3.3
Residual	0.475	+8.1	+10.3
Other Petroleum Products	0.556	+1.6	+6.4
Natural Gas (Dry)	1.382	-1.5	-0.8
Coal (Anthracite, bituminous, and lignite)	1.106	+7.9	+5.2
Electricity (Sales)	0.556	+4.0	+4.8
TOTAL ENERGY USE	5.678	+4.9	+3.0
Economic Sector Consumption			
Residential and Commercial	1.876	+2.5	+1.0
Industrial	2.242	+6.3	+5.2
Transportation	1.559	+5.8	+3.5

*Calculated on daily average basis.

Energy Consumption by the Residential and Commercial Economic Sector[1]

		Coal	Natural Gas (dry)	Petroleum[2]	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use
		Quadrillion (10^{15}) Btu						
1974	January	0.040	1.158	0.662	0.297	0.700	2.856	2.856
	February	0.034	1.027	0.590	0.274	0.601	2.526	5.381
	March	0.027	0.902	0.569	0.268	0.644	2.411	7.792
	April	0.019	0.754	0.530	0.258	0.598	2.158	9.950
	May	0.016	0.499	0.497	0.254	0.655	1.921	11.871
	June	0.015	0.357	0.503	0.283	0.687	1.845	R13.716
	July	0.014	0.293	0.507	0.316	0.847	1.977	15.694
	August	0.021	0.265	0.519	0.331	0.809	1.945	17.639
	September	0.025	0.278	0.513	0.315	0.655	1.786	19.424
	October	0.027	0.395	0.589	0.272	R0.637	R1.921	21.345
	November	0.027	0.569	0.583	0.263	0.638	R2.080	R23.425
	December	0.031	0.930	0.628	0.293	0.742	2.624	R26.049
	TOTAL	**0.297**	**7.427**	**6.688**	**3.424**	**R8.213**	**R26.049**	
1975	January	0.036	1.124	0.648	0.310	R0.759	R2.876	R2.876
	February	0.023	1.105	0.553	0.292	0.646	R2.620	R5.496
	March	0.023	1.018	0.565	0.284	R0.693	R2.583	R8.079
	April	0.011	0.905	0.506	0.270	0.632	2.323	R10.402
	May	0.011	0.522	0.457	0.267	R0.681	R1.937	R12.339
	June	0.014	0.338	0.451	0.297	R0.756	R1.856	R14.195
	July	0.016	0.294	0.481	R0.331	R0.853	R1.975	R16.169
	August	0.016	0.267	0.460	0.350	0.879	1.973	R18.142
	September	0.020	0.281	0.501	0.336	R0.694	1.831	R19.973
	October	0.024	0.353	0.555	0.280	0.677	R1.890	R21.863
	November	0.025	0.523	R0.516	0.273	0.659	1.997	R23.860
	December	0.034	0.910	0.642	0.303	0.780	2.669	R26.529
	TOTAL	**0.253**	**7.640**	**6.337**	**R3.591**	**R8.709**	**R26.529**	
1976	January	0.032	1.229	0.679	0.340	0.841	3.121	3.121
	February	0.019	1.106	0.595	0.314	0.687	2.722	5.843
	March	0.018	0.858	0.592	0.286	0.704	2.457	8.301
	April	0.014	0.704	0.518	0.270	0.629	2.136	10.437
	May	0.012	0.510	0.524	0.267	R0.646	1.960	12.397
	June	0.014	0.369	0.507	0.286	R0.752	R1.929	R14.325
	July	0.011	0.297	0.502	0.335	R0.861	R2.007	R16.332
	August	0.012	0.275	0.526	0.347	R0.869	R2.030	R18.362
	September	0.013	0.271	0.536	0.336	0.721	1.876	20.238
	TOTAL (9 months)	**0.147**	**5.620**	**4.980**	**2.781**	**6.711**	**20.238**	

(See footnotes on page 55)

Energy Consumption (Continued)

Energy Consumption by the Industrial Economic Sector[1]

		Coal	Natural Gas (dry)	Petroleum[3]	Hydro-electric	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use
		Quadrillion (10^{15}) Btu							
1974	January	0.378	0.830	0.603	0.003	0.189	0.447	2.450	2.450
	February	0.354	0.804	0.538	0.003	0.187	0.409	2.295	4.745
	March	0.358	0.827	0.519	0.003	0.190	0.457	2.354	7.099
	April	0.352	0.662	0.483	0.003	0.191	0.444	R2.136	R9.235
	May	0.342	0.788	0.453	0.003	0.195	0.503	2.284	11.520
	June	0.326	0.724	0.458	0.003	0.197	0.478	2.186	13.706
	July	0.325	0.806	0.462	0.003	0.196	0.526	2.318	16.024
	August	0.335	0.853	0.473	0.003	0.203	0.497	2.365	18.389
	September	0.325	0.933	0.468	0.003	0.204	0.425	2.358	20.747
	October	0.347	0.997	0.537	0.003	0.205	0.480	R2.570	23.316
	November	0.312	1.001	0.531	0.003	0.195	R0.474	2.516	R25.833
	December	0.309	0.945	0.573	0.003	0.182	0.462	R2.475	28.307
	TOTAL	**4.062**	**10.170**	**6.100**	**0.036**	**2.337**	**R5.603**	**28.307**	
1975	January	0.344	0.897	0.591	0.003	0.189	0.464	2.488	2.488
	February	0.344	0.626	0.505	0.003	0.185	0.410	2.074	4.562
	March	0.365	0.656	0.515	0.003	0.186	0.453	R2.179	R6.741
	April	0.340	0.440	0.461	0.003	0.184	0.431	1.859	R8.600
	May	0.322	R0.523	0.417	0.003	0.182	R0.465	R1.911	R10.511
	June	R0.302	0.600	0.411	0.003	0.185	R0.469	R1.970	R12.481
	July	0.287	0.647	0.439	0.003	R0.190	R0.490	R2.056	R14.537
	August	0.294	0.730	0.420	0.003	0.191	0.481	2.119	R16.656
	September	0.294	0.761	0.457	0.003	0.194	0.400	2.109	R18.765
	October	0.306	0.902	0.506	0.003	0.193	R0.466	R2.376	R21.140
	November	0.319	0.872	0.471	0.003	0.192	R0.464	2.320	R23.461
	December	0.338	0.904	0.585	0.003	0.189	0.488	2.507	R25.968
	TOTAL	**R3.854**	**R8.556**	**R5.779**	**0.036**	**R2.260**	**R5.481**	**R25.968**	
1976	January	0.323	0.838	0.620	0.003	0.196	0.485	2.466	2.466
	February	0.304	0.499	0.543	0.003	0.199	0.435	1.983	4.448
	March	0.323	0.723	0.540	0.003	0.206	0.508	2.304	6.752
	April	0.305	0.558	0.473	0.003	0.205	0.478	2.022	8.774
	May	0.313	0.645	0.478	0.003	0.209	0.505	2.153	10.927
	June	R0.299	R0.635	0.462	0.003	0.213	R0.560	R2.172	R13.099
	July	R0.294	R0.705	0.458	0.003	R0.215	R0.551	R2.226	R15.325
	August	0.303	R0.706	0.480	0.003	0.213	0.534	R2.238	R17.564
	September	0.302	0.773	0.489	0.003	0.215	0.461	2.242	19.806
	TOTAL (9 months)	**2.767**	**6.082**	**4.542**	**0.027**	**1.871**	**4.518**	**19.806**	

(See footnotes on page 55)

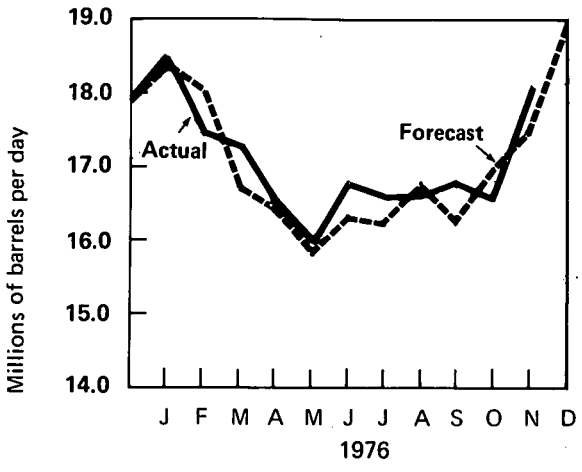
Energy Consumption by the Transportation Economic Sector[1]

		Coal	Natural Gas[4] (dry)	Petroleum	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use
		Quadrillion (10^{15}) Btu						
1974	January	0.001	0.072	1.399	0.005	0.013	1.490	1.490
	February	0.001	0.066	1.300	0.005	0.011	1.384	2.874
	March	0.001	0.063	1.417	0.005	0.012	1.498	4.372
	April	0.001	0.051	1.397	0.005	0.011	1.465	5.837
	May	0.001	0.047	1.484	0.005	0.012	1.547	7.384
	June	0.001	0.039	1.448	0.005	0.011	1.503	8.887
	July	0.001	0.040	1.514	0.005	0.012	1.572	10.458
	August	0.001	0.041	1.533	0.005	0.012	1.590	12.049
	September	0.001	0.044	1.393	0.005	0.010	1.453	13.501
	October	0.001	0.050	1.507	0.005	0.012	1.576	15.077
	November	0.001	0.057	1.455	0.005	0.013	1.532	16.609
	December	0.001	0.068	1.546	0.006	0.014	1.634	18.243
	TOTAL	**0.009**	**0.638**	**17.392**	**0.060**	**0.144**	**18.243**	
1975	January	0.001	0.073	1.498	0.006	0.014	1.592	1.592
	February	0.001	0.063	1.334	0.005	0.012	1.415	3.006
	March	0.001	0.061	1.456	0.005	0.013	1.536	4.542
	April	0.001	0.049	1.455	0.005	0.012	1.522	6.064
	May	0.001	0.038	1.480	0.005	0.012	1.536	7.600
	June	0.001	0.034	1.466	0.005	0.012	1.517	9.116
	July	0.001	0.034	1.498	0.005	0.012	1.550	10.666
	August	0.001	0.036	1.509	0.005	0.012	1.563	12.229
	September	0.001	0.038	1.420	0.005	0.010	1.473	13.703
	October	0.001	0.045	1.495	0.005	0.013	1.559	15.262
	November	0.001	0.051	1.379	0.006	0.013	1.449	16.711
	December	0.001	0.066	1.556	0.006	0.015	1.643	18.354
	TOTAL	**0.008**	**0.587**	**17.547**	**0.062**	**0.150**	**18.354**	
1976	January	0.001	0.075	1.532	0.006	0.015	1.628	1.628
	February	0.001	0.058	1.380	0.006	0.012	1.457	3.085
	March	0.001	0.057	1.552	0.005	0.013	1.629	4.714
	April	0.001	0.046	1.517	0.005	0.012	1.580	6.293
	May	0.001	0.042	1.493	0.005	0.012	1.553	7.847
	June	0.001	0.036	1.546	0.005	0.012	1.600	9.446
	July	0.001	0.036	1.587	0.005	0.013	1.642	11.088
	August	0.001	0.036	1.538	0.005	0.013	R1.592	R12.681
	September	0.001	0.038	1.504	0.005	0.011	1.559	14.240
	TOTAL (9 months)	**0.006**	**0.424**	**13.650**	**0.047**	**0.112**	**14.240**	

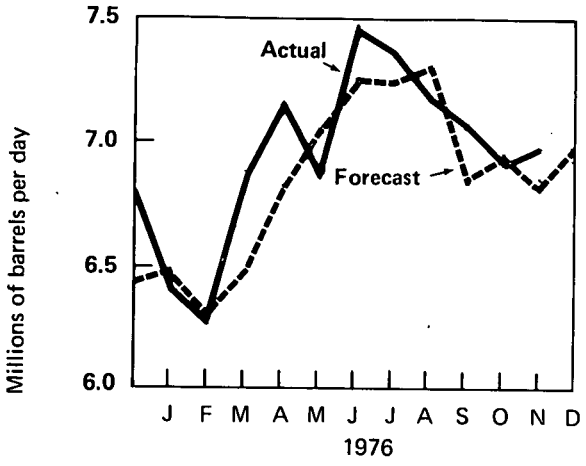
[1] See Explanatory Note 12 for definitions of the Residential and Commercial, Industrial, and Transportation Sectors. The methodology used for sector calculation is provided in the footnotes of the previous table. Printed totals may differ slightly from the sum of their row/column components due to independent rounding.
[2] The percentage share used in calculating Residential and Commercial consumption of petroleum was 52.5 percent for 1973 and 52.3 percent for 1974, 1975, and 1976.
[3] The percentage share used in calculating Industrial consumption of petroleum was 47.5 percent for 1973 and 47.7 percent for 1974, 1975, and 1976.
[4] The percentage share used in calculating Transportation consumption of natural gas was 3.9 percent for 1973 and 3.5 percent for 1974, 1975, and 1976.
R=Revised data.

Petroleum Consumption and Forecast

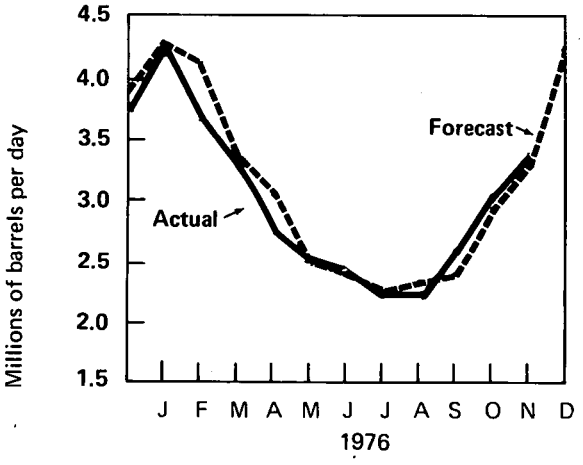
Total Domestic Demand for Petroleum Products



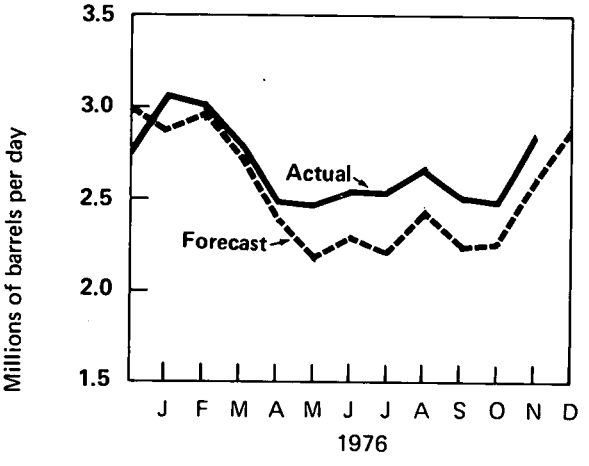
Domestic Demand for Motor Gasoline



Domestic Demand for Distillate Fuel Oil



Domestic Demand for Residual Fuel Oil



Notes:

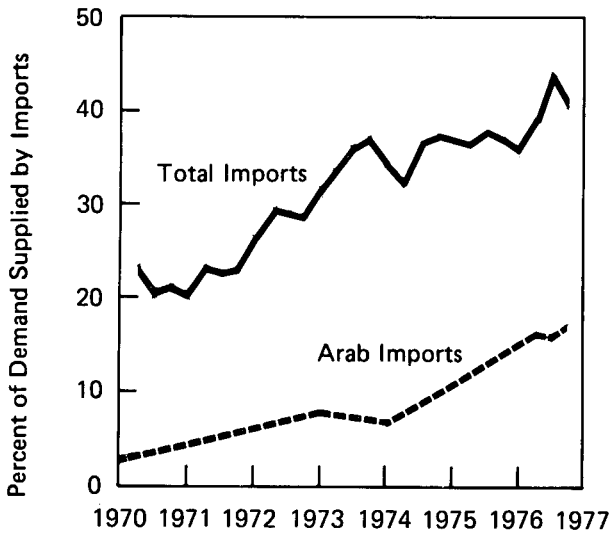
Domestic Demand – Demand for products, in terms of real consumption, is not available; production plus imports plus withdrawals from primary stocks is used as a proxy for consumption. Secondary stocks, not measured by BOM and API, are substantial for some products.

Actuals –Based on BOM data for January through September, FEA data for October, and API data for November.

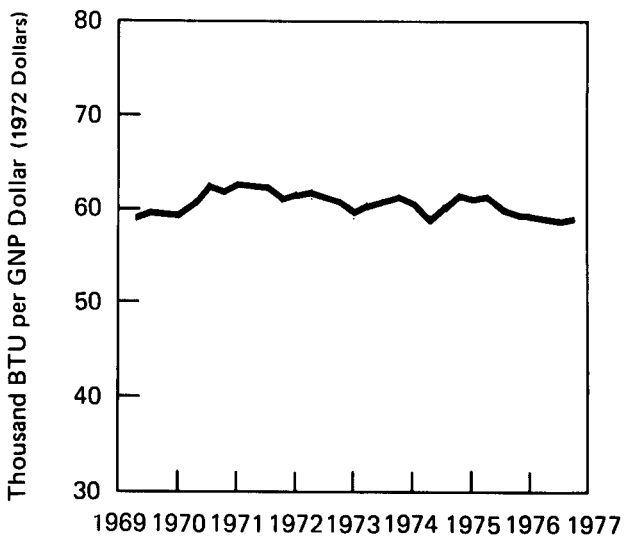
Forecast – See Explanatory Note 6 for discussion of basic assumptions for forecast.

Energy Indicators

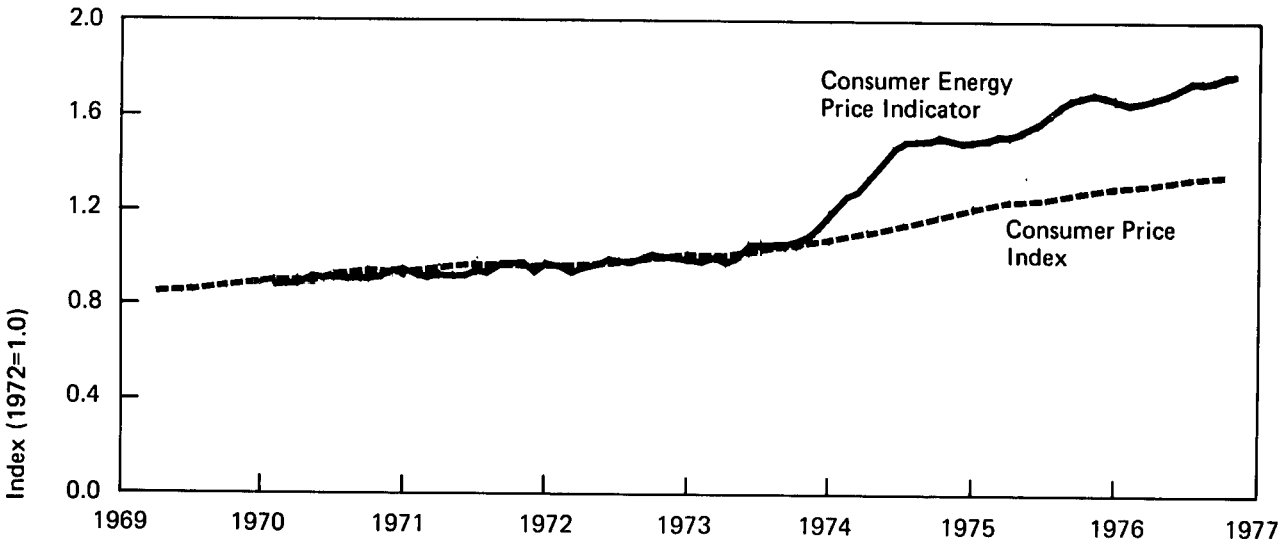
U.S. Dependence on Petroleum Imports*



Energy Consumption per GNP Dollar**



Consumer Energy Price Indicator***



*See Explanatory Note 13.
**See Explanatory Note 14.
***See Explanatory Note 15.
Source: FEA.

Part 8 Resource Development

Oil and Gas Exploration

The number of rotary rigs drilling for oil and gas continued to rise during December with 1,860 rigs in operation, 20 more than during the previous month. Rig activity during the year averaged 1,656, four rigs less than the average for 1975.

Well completions declined for the second consecutive month during November. A total of 3,211 wells were drilled during the month, 58 fewer than in October, and 454 fewer than in November 1975. Cumulative completions since the first of the year, however, are running 8.3 percent ahead of last year's total.

Seismic oil and gas exploration activity recouped in November following a minor decline in September and October. A total of 275 land and marine crews were active in the United States and U.S. waters during November, a gain of 8 crews from the previous month. This increase compares with a 5-crew decrease between October and November 1975 and a 14-crew decrease for the same 2 months in 1974.

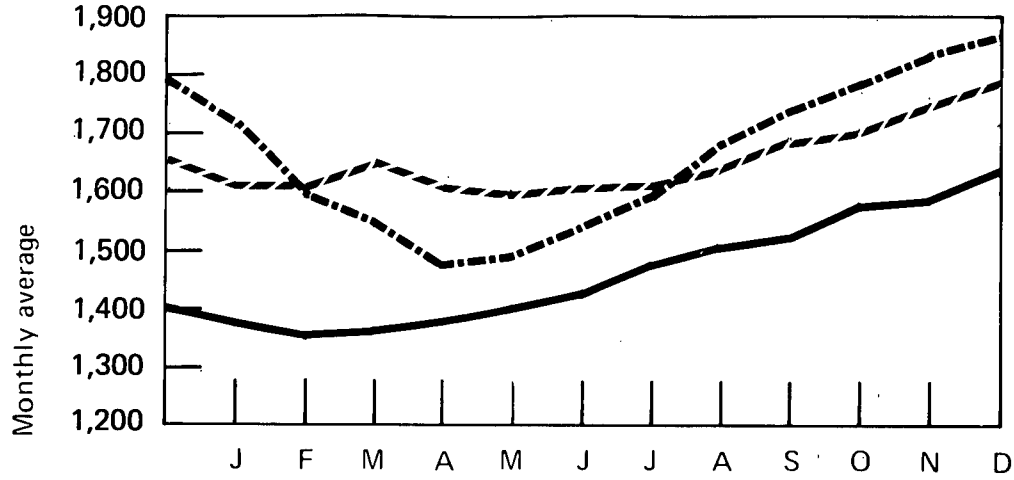
The Department of the Interior has tentatively scheduled six oil and gas lease sales in the Outer Continental Shelf (OCS) during 1977. The areas are as follows: Alaska Lower Cook Inlet (February), Gulf of Mexico (April), North Atlantic Georges Bank Trough (June), South Atlantic Southeast Georgia Embayment (September), Gulf of Alaska Kodiak Basin (November), and a second sale in the Gulf of Mexico (December).

Oil and Gas Exploration

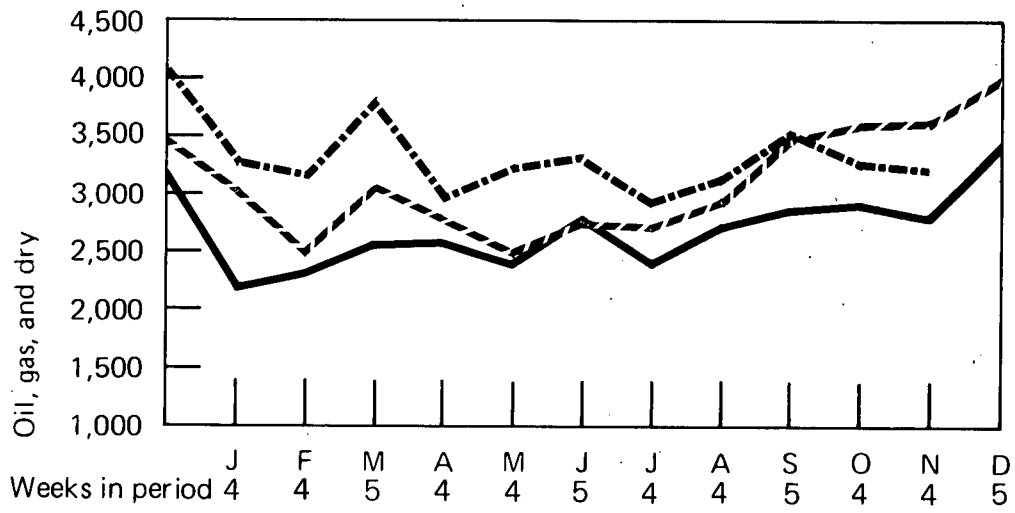
		Rotary Rigs in Operation	Wells Drilled				Total Footage of Wells Drilled
		Monthly average	Oil	Gas	Dry	Total	Thousands of feet
1974	January	1,372	763	577	803	2,143	10,392
	February	1,355	901	600	816	2,317	12,160
	March	1,367	936	638	1,003	2,577	12,844
	April	1,381	947	700	945	2,592	13,349
	May	1,412	957	520	870	2,347	11,460
	June	1,432	1,238	586	982	2,806	12,976
	July	1,480	1,008	461	884	2,353	11,802
	August	1,518	1,210	555	968	2,733	12,410
	September	1,527	1,200	600	1,091	2,891	12,676
	October	1,584	1,131	551	1,241	2,923	14,081
	November	1,596	1,008	626	1,053	2,767	11,795
	December	1,643	1,339	791	1,274	3,404	15,707
	AVERAGE	**1,475**	**TOTAL*** **12,784**	**7,240**	**11,674**	**31,698**	**150,551**
1975	January	1,615	1,299	655	1,040	2,994	13,189
	February	1,611	1,097	458	933	2,488	12,071
	March	1,651	1,341	658	1,091	3,090	15,472
	April	1,604	1,181	506	1,071	2,758	13,545
	May	1,592	1,100	451	891	2,442	12,054
	June	1,613	1,246	509	1,022	2,777	13,540
	July	1,616	1,229	557	920	2,706	12,545
	August	1,645	1,272	587	1,122	2,981	14,221
	September	1,699	1,504	831	1,165	3,500	15,636
	October	1,716	1,633	682	1,310	3,625	16,689
	November	1,757	1,619	776	1,270	3,665	15,788
	December	1,793	1,817	832	1,424	4,073	17,556
	AVERAGE	**1,660**	**TOTAL*** **16,408**	**7,580**	**13,247**	**37,235**	**174,434**
1976	January	1,710	1,465	772	1,055	3,292	14,517
	February	1,594	1,341	652	1,159	3,152	14,888
	March	1,540	1,726	821	1,301	3,848	18,126
	April	1,480	1,237	672	994	2,903	13,765
	May	1,496	1,501	658	1,104	3,263	14,196
	June	1,546	1,500	709	1,123	3,332	14,780
	July	1,597	1,312	730	916	2,958	13,716
	August	1,691	1,265	711	1,140	3,116	14,697
	September	1,744	1,474	909	1,199	3,582	16,777
	October	1,794	1,396	750	1,123	3,269	14,542
	November	1,840	1,291	698	1,222	3,211	14,642
	December	1,860	NA	NA	NA	NA	NA
	AVERAGE	**1,656**	**TOTAL*** **15,512** (11 months)	**8,131**	**12,268**	**35,911**	**164,763**

*Totals reflect subsequent data revisions and therefore may not agree with cumulative monthly data.
NA=Not available.
Sources: Rotary Rigs—Hughes Tool Company; Wells—American Petroleum Institute.

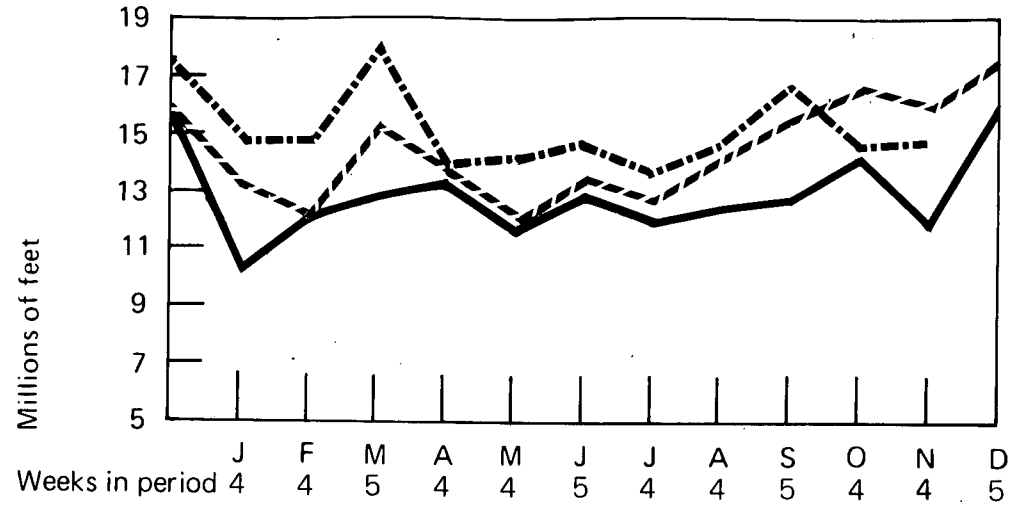
Rotary Rigs in Operation



Total Wells Drilled



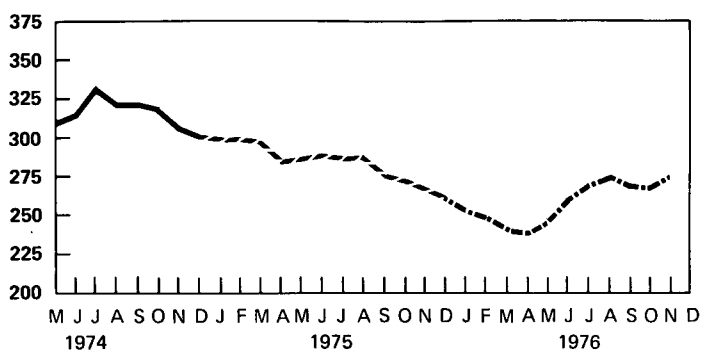
Total Footage of Wells Drilled



Oil and Gas Exploration (Continued)

		Crews Engaged in Seismic Exploration			Line Miles of Seismic Exploration		
		Offshore	Onshore	Total	Offshore	Onshore	Total
		Monthly average			Monthly average		
1973	Year	23	227	250	21,579	10,597	32,175
1974	Year	31	274	305	28,482	13,219	41,701
1975	Year	30	254	284	25,773	12,558	38,331
1974	January-April	NA	NA	NA			
	May	35	278	313			
	June	38	279	317			
	July	35	299	334			
	August	34	287	321			
	September	34	287	321			
	October	32	288	320			
	November	30	276	306			
	December	25	275	300			
1975	January	27	274	301			
	February	24	278	302			
	March	23	276	299			
	April	23	260	283			
	May	32	254	286			
	June	38	251	289			
	July	37	249	286			
	August	40	249	289			
	September	40	234	274			
	October	29	241	270			
	November	27	238	265			
	December	26	233	259			
1976	January	20	232	252			
	February	17	232	249			
	March	18	222	240			
	April	17	221	238			
	May	21	226	247			
	June	29	229	258			
	July	30	240	270			
	August	33	242	275			
	September	28	240	268			
	October	21	246	267			
	November	25	250	275			
	AVERAGE (11 months)	**23**	**235**	**258**			

Total Seismic Crews



NA=Not available.
Source: Society of Exploration Geophysicists.

Motor Gasoline

The national average selling price for regular gasoline at full service retail outlets was 60.0 cents per gallon in November, a decrease of 0.2 cent from the previous month's price. This was the first month since March that the price has declined. The average price that retailers paid for regular gasoline in November decreased by a slightly larger amount (0.4 cent) to 52.2 cents per gallon, increasing the average dealer margin to 7.8 cents per gallon from 7.6 cents in October.

Heating Oil

During October, the national average selling price for heating oil purchased by residential customers was 40.7 cents per gallon, 0.5 cent above September's price.

Residual Fuel Oil

The average No. 6 residual fuel oil price rose 12 cents at the retail level in September to $11.30 per barrel. This brought the total increase since May 1976, the last month that residual fuel prices were subject to price controls, to 35 cents per barrel. The average price of No. 6 residual fuel with 0.3 percent or less sulfur content has increased 63 cents per barrel since May.

Crude Oil

The preliminary average "upper tier" crude oil price during October was $11.62 per barrel, 3 cents below the price in September.

The preliminary price of "lower tier" crude oil was $5.16 per barrel in October, 1 cent below the September figure.

The preliminary actual stripper oil price was $13.35 in October, 14 cents above the price in September, the first month that stripper oil was exempt from price controls.

The preliminary actual average domestic crude oil price during October was $8.45 per barrel, 6 cents above the September price.

The preliminary refiner acquisition cost of domestic crude oil during October was $9.05 per barrel, 10 cents above the revised September figure.

The preliminary refiner acquisition cost of imported crude was $13.47 per barrel in October, 2 cents below the price in September.

The preliminary estimate for the composite cost of crude oil purchased by refiners was $11.18 per barrel during October, 10 cents above the September figure. This increase reflects the increase in the domestic stripper oil price and the change in the definition of a property.

Utility Fossil Fuels

The national average cost of all fossil fuels delivered to utilities advanced 6.2 cents in July to 113.2 cents per million Btu, the largest monthly increase so far in 1976.

The national average cost of coal delivered to utilities increased 1.1 cents in July to 85.7 cents per million Btu.

The average cost of residual fuel delivered to utilities was 187.0 cents per million Btu, a drop of 0.4 cent from the cost in June.

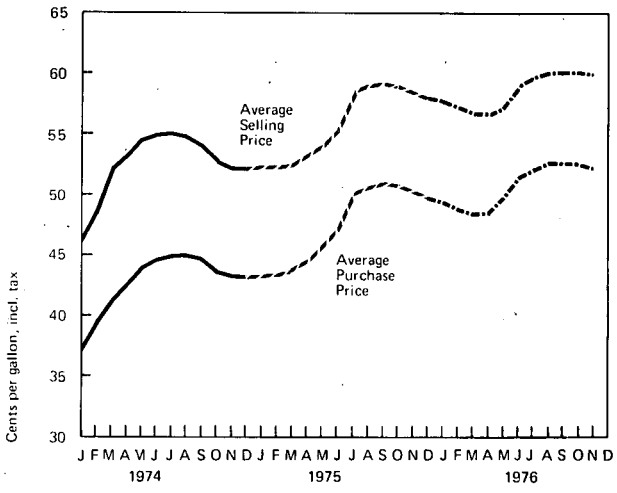
The average cost of natural gas delivered to utilities increased 1.8 cents in July to 106.2 cents per million Btu.

Motor Gasoline

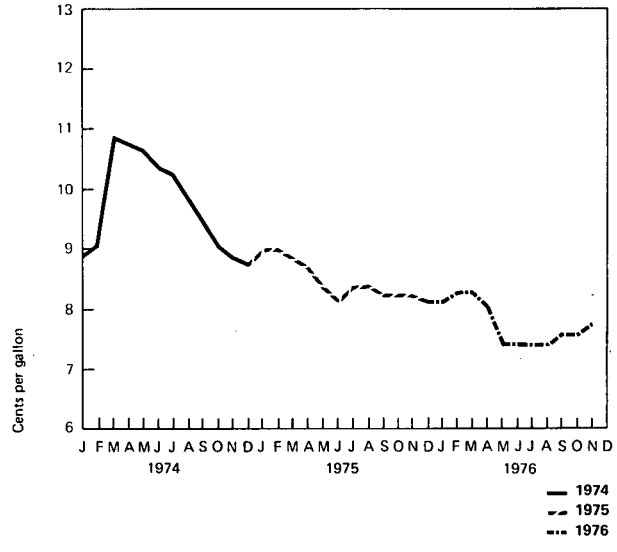
Regular Gasoline at Full Service Retail Outlets

		Average Selling Price	Average Purchase Price	Average Dealer Margin
		Cents per gallon, including tax*		
1974	January	46.3	37.4	8.9
	February	48.8	39.7	9.1
	March	52.3	41.4	10.9
	April	53.4	42.7	10.7
	May	54.7	44.1	10.6
	June	55.1	44.8	10.3
	July	55.2	45.0	10.2
	August	54.9	45.1	9.8
	September	54.2	44.8	9.4
	October	52.4	43.4	9.0
	November	52.0	43.2	8.8
	December	52.0	43.3	8.7
	AVERAGE	**52.8**	**43.1**	
1975	January	52.4	43.4	9.0
	February	52.5	43.5	9.0
	March	52.6	43.8	8.8
	April	53.5	44.9	8.6
	May	54.3	46.0	8.3
	June	55.6	47.5	8.1
	July	58.7	50.3	8.4
	August	59.2	50.8	8.4
	September	59.3	51.1	8.2
	October	58.9	50.7	8.2
	November	58.4	50.2	8.2
	December	58.0	49.9	8.1
	AVERAGE	**56.2**	**47.8**	
1976	January	57.7	49.6	8.1
	February	57.1	48.8	8.3
	March	56.6	48.3	8.3
	April	56.6	48.6	8.0
	May	57.4	50.0	7.4
	June	59.0	51.6	7.4
	July	59.6	52.2	7.4
	August	60.1	52.7	7.4
	September	60.2	52.6	7.6
	October	60.2	52.6	7.6
	November	60.0	52.2	7.8

Average Retail Prices For Regular



Average Margins For Regular



*To derive prices excluding taxes, 12.2 cents per gallon may be deducted for 1974 and 1975, and 12.5 may be deducted for 1976.

Sources: FEA for January through December 1974; Lundberg Survey, Inc., for January 1975 forward.

Regular Gasoline at Self Service Retail Outlets

		Average Selling Price	Average Dealer Margin
		Cents per gallon, including tax	
1975	November	55.4	5.5
	December	54.9	5.3
1976	January	54.7	5.4
	February	53.8	5.4
	March	53.2	5.3
	April	53.2	4.9
	May	54.4	4.5
	June	56.3	4.8
	July	56.6	4.6
	August	56.7	4.4
	September	56.5	4.3
	October	56.5	4.4
	November	56.4	4.5

Source: Lundberg Survey, Inc.

Motor Gasoline (Continued)

Average Selling Prices for Premium and Unleaded Gasoline at Full Service Retail Outlets

		Premium	Unleaded (Regular)
		Cents per gallon, including tax	
1974	January	50.1	48.8
	February	52.6	50.8
	March	56.0	53.6
	April	57.2	55.1
	May	58.5	57.1
	June	58.5	57.4
	July	59.0	57.2
	August	58.0	56.8
	September	58.2	55.8
	October	56.6	54.1
	November	56.3	53.9
	December	56.3	53.9
1975	January	57.1	NA
	February	57.3	56.1
	March	57.5	56.2
	April	58.2	57.1
	May	59.0	57.9
	June	60.3	58.8
	July	63.1	61.5
	August	63.6	62.0
	September	63.8	62.1
	October	63.4	62.1
	November	63.2	62.0
	December	62.9	61.4
1976	January	62.7	61.2
	February	62.1	60.6
	March	61.6	60.1
	April	61.6	60.4
	May	62.4	61.1
	June	63.9	62.9
	July	64.6	63.2
	August	65.2	63.9
	September	65.3	64.0
	October	65.2	64.0
	November	65.2	63.9

Sources: FEA for January through December 1974; Lundberg Survey, Inc., for January 1975 forward.

Average Selling Prices and Margins for Major and Independent Retail Dealers – November 1976

(Cents per gallon, including tax)

Regular Gasoline—Full Service

	Selling Price	Margin
Major	60.9	8.2
Independent	55.6	5.9
National Average	**60.0**	**7.8**

Regular Gasoline—Self Service

	Selling Price	Margin
Major	57.2	4.5
Independent	54.4	4.6
National Average	**56.4**	**4.5**

Premium Gasoline—Selling Prices

	Full Service	Self Service
Major	65.9	63.0
Independent	60.0	58.9
National Average	**65.2**	**61.9**

Unleaded Gasoline—Full Service Selling Prices

	Regular	Premium
Major	64.5	68.1
Independent	58.5	NA
National Average	**63.9**	**68.1**

NA=Not available.
Source: Lundberg Survey, Inc.

Average Regional Selling Prices and Dealer Margins for Regular Gasoline at Full Service Retail Outlets – November 1976

Region	Selling Price	Margin
	Cents per gallon, including tax	
1A New England	59.0	6.5
1B Mid Atlantic	60.5	7.4
1C Lower Atlantic	60.3	8.3
2 Mid Continent	59.9	7.1
3 Gulf Coast	57.6	9.3
4 Rocky Mountain	61.8	9.7
5 West Coast	62.0	8.1
National Average	**60.0**	**7.8**

Source: Lundberg Survey, Inc.

Motor Gasoline (Continued)

Retail Gasoline Price Changes for 21 Leading Refiners During November 1976 and Entitlement Position* During October 1976

Company	Effective Date of Change	Amount of Change	Entitlement Position (October)
		Cents per gallon	
Amerada Hess		None	Seller
American Petrofina	November 16	1.00 Unleaded 1.00 Premium (PAD I, II, V) 1.50 Premium (PAD III, IV)	Buyer
Ashland		None	Seller
Atlantic Richfield		None	Buyer
B.P.	November 19 November 30	-0.80 (PAD I) -1.00 (PAD II)	Seller
Cities Service	November 18	-1.00 (PAD I) -0.50 (PAD II)	Buyer
Champlin		None	Buyer
Continental		None	Buyer
Exxon	November 6	-1.00 (PAD I, II, III)	Buyer
Getty		None	Buyer
Gulf		None	Seller
Kerr-McGee	November 22	0.25 (PAD II)	Buyer
Mobil	November 19	-1.00 (PAD I, II, III)	Seller
Phillips		None	Buyer
Shell	November 11 November 13	-1.00 (PAD I, III) -1.00 (PAD II)	Buyer
Standard Oil of California	November 20	-1.00 (PAD I, II, III)	Seller
Standard Oil of Indiana	November 16	-1.00 (PAD I, II, III, IV)	Buyer
Standard Oil of Ohio	November 19 November 30	-0.80 (PAD I) -1.00 (PAD II)	Seller
Sun		None	Buyer
Texaco	November 18	-1.00 (PAD I, II, III)	Buyer
Union Oil of California		None	Buyer

*See definitions.
Source: FEA.

Jobber Prices for Regular Gasoline Sold by 21 Leading Refiners

		Northeast	Mid-Atlantic	Southeast	Central	Western	Southwest	Pacific	National Average
		Cents per gallon, excluding tax							
1974	January	21.4	21.4	21.1	21.3	22.2	20.1	21.0	21.2
	February	23.7	23.6	22.5	23.9	23.5	22.5	22.6	23.2
	March	25.4	25.2	24.1	25.3	24.5	24.2	25.2	24.8
	April	26.7	26.1	24.8	26.0	25.6	24.7	25.0	25.6
	May	28.5	28.4	26.8	28.2	27.7	26.3	26.3	27.5
	June	29.8	29.4	28.0	29.3	29.3	27.1	27.2	28.6
	July	29.9	29.3	28.0	29.4	28.9	27.8	28.0	28.8
	August	29.7	29.4	28.6	29.6	29.1	28.1	28.6	29.0
	September	29.3	28.9	28.0	28.8	28.7	27.4	27.8	28.4
	October	28.0	27.2	26.6	27.5	27.0	26.2	26.6	27.0
	November	27.8	27.3	26.6	27.5	27.5	26.3	27.3	27.2
	December	27.7	27.6	26.9	27.7	27.9	26.7	27.3	27.4
	AVERAGE								**26.7**
1975	January	27.8	27.8	27.4	28.2	28.5	27.2	27.8	27.8
	February	28.4	28.2	27.8	28.7	28.3	27.6	27.5	28.1
	March	28.9	28.8	28.4	29.1	29.0	27.8	28.0	28.6
	April	29.6	29.9	29.4	30.4	29.8	29.2	29.8	29.7
	May	30.9	31.0	30.5	31.6	31.2	30.4	31.0	30.9
	June	32.4	32.5	32.0	33.1	32.6	31.6	32.6	32.4
	July	34.4	34.6	33.9	34.9	34.5	33.4	33.7	34.2
	August	35.3	35.1	34.6	35.6	35.2	34.1	34.5	34.9
	September	35.2	35.1	34.5	35.4	35.0	34.1	34.5	34.8
	October	34.3	34.6	34.0	34.9	34.3	33.8	34.2	34.3
	November	34.1	34.3	33.9	34.6	34.3	33.6	34.0	34.1
	December	33.7	34.1	33.6	34.3	33.8	33.3	33.7	33.8
	AVERAGE								**32.0**
1976	January	33.3	33.9	33.2	34.0	33.2	33.1	33.5	33.5
	February	33.0	33.4	32.6	33.8	32.6	32.9	33.5	33.1
	March	32.4	33.0	31.8	33.4	32.5	32.6	33.2	32.7
	April	33.0	33.5	32.3	33.9	33.2	33.2	33.2	33.2
	May	34.4	34.9	33.6	35.3	34.8	34.8	34.7	34.6
	June	35.7	35.9	34.8	36.5	36.1	35.9	35.5	35.8
	July	36.1	36.3	35.4	36.8	36.3	36.3	36.3	36.2
	August	36.5	36.6	35.7	37.3	36.4	36.5	36.7	36.5
	September	35.8	36.1	35.3	36.9	35.9	36.6	36.5	36.2
	October	35.7	35.8	35.2	36.7	35.9	36.4	36.5	36.0
	November	34.9	35.1	34.4	36.3	35.3	36.3	36.5	35.6

Source: FEA.

Diesel Fuel

Average Selling Prices and Margins for Diesel Fuel*

(Cents per gallon, including tax)

		Selling Price		Margin	
		Truck Stops	Service Stations	Truck Stops	Service Stations
1974	January	NA	46.0	NA	6.7
	February	NA	45.9	NA	6.6
	March	NA	46.8	NA	7.2
	April	NA	48.3	NA	7.2
	May	NA	48.4	NA	7.2
	June	NA	49.3	NA	7.7
	July	NA	49.7	NA	7.3
	August	NA	49.9	NA	7.3
	September	NA	49.6	NA	7.4
	October	NA	49.3	NA	7.5
	November	NA	49.3	NA	7.2
	December	NA	49.2	NA	7.5
1975	January	NA	50.6	NA	6.8
	February	49.7	50.2	7.0	7.3
	March	50.1	50.2	7.5	7.4
	April	50.5	50.6	7.4	7.5
	May	50.3	51.0	7.0	7.7
	June	51.4	51.4	7.5	7.9
	July	51.2	52.4	7.3	8.2
	August	52.1	52.6	8.1	8.9
	September	52.1	52.7	7.4	8.7
	October	51.8	53.0	6.2	7.7
	November	52.0	53.0	5.3	6.5
	December	51.7	52.4	5.3	6.7
1976	January	52.0	52.5	5.6	7.2
	February	52.1	52.0	6.0	7.3
	March	51.4	52.4	5.6	7.1
	April	51.1	52.8	5.8	7.8
	May	51.4	52.9	6.9	7.8
	June	52.0	53.3	7.0	7.7
	July	52.1	53.1	6.4	7.1
	August	52.3	53.2	6.0	7.0
	September	52.2	53.1	5.7	6.8
	October	52.4	53.1	5.8	6.5
	November	52.9	53.3	6.1	6.4

*See Explanatory Note 16.
Sources: FEA for January through December 1974; Lundberg Survey, Inc., for January 1975 forward.

Average Selling Prices and Margins for Major and Independent Retail Dealers – November 1976

(Cents per gallon, including tax)

Truck Stops

	Selling Price	Margin
Major	53.9	5.6
Independent	51.6	6.9
National Average	**52.9**	**6.1**

Service Stations

	Selling Price	Margin
Major	55.2	6.2
Independent	51.7	6.6
National Average	**53.3**	**6.4**

Source: Lundberg Survey, Inc.

Heating Oil

Residential Heating Oil Prices

		Average Selling Price*	Average Purchase Price*	Average Dealer Margin*
		Cents per gallon		
1974	January	31.1	23.4	7.7
	February	32.8	25.4	7.4
	March	33.8	25.9	7.9
	April	34.0	25.9	8.1
	May	35.1	26.8	8.3
	June	35.3	27.5	7.8
	July	35.2	28.1	7.1
	August	35.8	28.1	7.7
	September	36.3	28.7	7.6
	October	35.6	28.9	6.7
	November	37.9	29.1	8.8
	December	36.9	28.5	8.4
	AVERAGE	**34.7**	**26.9**	
1975	January	37.4	29.1	8.3
	February	37.0	28.7	8.3
	March	36.6	28.4	8.2
	April	36.1	29.3	6.8
	May	36.7	30.0	6.7
	June	37.1	30.3	6.8
	July	37.2	30.6	6.6
	August	38.0	31.2	6.8
	September	38.4	31.0	7.4
	October	39.3	31.8	7.5
	November	39.4	32.1	7.3
	December	40.1	32.4	7.7
	AVERAGE	**37.7**	**31.2**	
1976	January	40.1	32.4	7.7
	February	40.1	32.4	7.7
	March	NA	NA	NA
	April	NA	NA	NA
	May	NA	NA	NA
	June	39.3	NA	NA
	July	39.3	NA	NA
	August	39.8	NA	NA
	September	40.2	NA	NA
	October	40.7	NA	NA

*Average selling prices, purchase prices, and dealer margins represent sales for residential heating oil only.
NA=Not available.
Source: FEA.

Residential Heating Oil Prices by Region

		New England	Mid Atlantic	Southeast	East North Central	East South Central	West North Central	West South Central	Mountain	West Coast
						Cents per gallon				
1974	January	31.9	31.6	30.8	30.3	29.8	31.3	NA	30.4	30.5
	February	33.8	33.5	32.8	30.9	32.0	32.9	NA	37.2	32.8
	March	31.9	33.7	33.9	34.2	30.6	34.5	NA	NA	NA
	April	34.3	34.8	32.5	33.5	33.7	30.1	NA	34.2	32.6
	May	34.8	35.6	36.2	34.2	34.4	32.6	NA	34.8	37.8
	June	35.9	36.2	35.8	34.9	31.1	33.6	NA	35.9	39.1
	July	35.2	35.5	35.6	34.4	30.2	34.9	NA	36.1	36.3
	August	36.3	36.1	37.8	35.1	33.7	35.2	NA	NA	35.9
	September	37.2	36.5	36.1	35.0	33.6	35.8	NA	32.3	35.1
	October	36.7	35.9	36.9	33.3	34.1	33.8	NA	35.6	36.3
	November	39.0	38.7	37.4	36.4	35.3	35.6	NA	37.3	36.4
	December	38.3	38.7	36.8	34.2	34.7	33.5	NA	35.8	33.9
1975	January	40.2	38.9	36.5	33.2	34.7	34.0	NA	37.5	38.0
	February	39.2	38.4	36.8	33.4	34.7	33.3	NA	36.6	37.7
	March	38.0	37.8	36.4	34.2	33.2	34.3	NA	NA	36.8
	April	37.4	36.8	36.8	33.2	33.7	34.5	NA	38.9	36.8
	May	37.6	36.9	36.4	35.1	34.7	35.4	NA	37.0	37.8
	June	37.7	37.7	36.4	35.8	NA	35.9	NA	37.6	37.6
	July	37.9	36.9	36.9	36.4	34.7	36.8	NA	NA	38.8
	August	38.8	38.2	37.9	36.3	35.7	36.3	NA	41.3	39.3
	September	39.4	38.7	37.6	36.5	35.7	36.8	NA	38.9	40.1
	October	40.3	39.9	38.3	37.4	36.6	37.9	NA	39.0	41.0
	November	41.0	39.6	38.7	37.9	NA	38.1	NA	40.2	41.3
	December	41.0	41.1	39.0	38.5	34.1	38.0	NA	44.8	40.9
1976	January	41.3	40.6	39.9	38.6	NA	39.0	NA	40.2	42.0
	February	41.1	41.6	39.2	38.5	37.2	38.9	NA	NA	40.8

NA=Not available.
Source: FEA.

Average Distributor Purchase Prices for Heating Oil by Region

		New England	Mid Atlantic	Southeast	East North Central	East South Central	West North Central	West South Central	Mountain	West Coast
						Cents per gallon				
1974	January	22.3	23.4	23.3	23.8	23.5	24.0	NA	22.5	23.0
	February	24.9	25.5	25.3	24.8	25.2	26.4	NA	29.7	25.3
	March	24.9	25.0	26.3	25.6	24.0	27.0	NA	NA	NA
	April	25.7	26.0	26.0	27.1	26.3	24.0	NA	26.8	26.0
	May	26.3	27.0	27.5	27.3	27.4	25.8	NA	27.1	26.2
	June	27.5	27.6	27.8	29.0	25.4	27.4	NA	27.3	28.0
	July	28.1	28.2	28.3	27.5	25.2	28.5	NA	28.2	29.1
	August	28.1	28.2	27.9	27.5	29.3	28.8	NA	NA	28.2
	September	29.2	28.9	28.5	27.8	28.2	28.4	NA	29.3	28.8
	October	29.9	29.4	28.8	27.7	28.3	27.4	NA	29.9	29.2
	November	29.8	29.7	28.8	27.8	29.1	27.6	NA	27.9	29.8
	December	29.3	29.4	28.4	27.4	28.8	26.7	NA	29.3	27.0
1975	January	30.3	29.7	28.5	27.2	28.8	27.5	NA	28.5	29.7
	February	29.6	29.3	28.6	27.2	28.8	27.3	NA	29.4	28.5
	March	29.5	29.3	29.1	28.1	26.8	28.1	NA	NA	27.6
	April	29.4	29.5	29.7	28.3	27.8	29.5	NA	29.0	28.5
	May	30.5	30.0	30.0	30.0	28.8	29.4	NA	30.9	28.7
	June	30.4	30.2	30.6	30.5	NA	30.7	NA	31.8	29.0
	July	30.7	30.1	29.9	31.6	28.8	31.4	NA	NA	30.4
	August	31.6	30.8	30.9	31.2	29.8	30.2	NA	31.6	32.8
	September	31.4	30.9	30.7	30.6	29.8	30.6	NA	31.9	31.4
	October	32.0	31.9	31.3	31.5	31.1	31.4	NA	34.4	32.5
	November	32.5	31.7	32.0	32.1	NA	32.0	NA	34.1	32.3
	December	32.9	32.7	31.8	32.0	29.4	31.4	NA	33.9	32.8
1976	January	32.5	32.5	31.9	32.3	NA	32.3	NA	33.6	32.9
	February	32.8	32.9	31.6	31.9	31.3	32.1	NA	NA	31.1

NA=Not available.
Source: FEA.

Residual Fuel Oil

RESIDUAL FUEL OIL
(Dollars per barrel)

		NO. 5		NO. 6								BUNKER "C"	
				0.0 to 0.3 percent sulfur		0.31 to 1.0 percent sulfur		Greater than 1.0 percent sulfur		Total			
		Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale	Retail	Wholesail	Retail
1975	July	10.19	11.28	11.57	12.86	10.90	12.05	10.25	10.59	10.66	11.70	7.88	10.54
	August	10.19	11.04	11.53	13.22	10.85	12.34	9.72	10.53	10.49	11.89	8.76	10.43
	September	10.58	11.07	11.75	12.94	10.63	11.65	9.87	10.52	10.48	11.52	8.93	10.29
	October	10.15	11.12	11.50	12.98	10.37	12.09	9.75	10.38	10.30	11.69	8.88	10.31
	November	10.90	11.27	12.21	12.96	10.33	12.03	9.90	10.34	10.47	11.68	9.01	10.43
	December	10.83	11.64	11.89	12.87	10.37	11.83	9.65	10.06	10.24	11.42	9.07	10.15
1976	January	11.08	11.75	12.06	12.39	10.60	11.68	9.57	10.23	10.53	11.35	8.75	10.35
	February	10.49	11.59	12.42	12.78	10.88	11.86	9.70	10.36	10.73	11.52	8.64	10.27
	March	10.23	11.89	12.34	12.81	11.05	11.85	9.57	10.22	10.74	11.43	8.59	10.33
	April	10.30	11.58	11.49	12.34	10.93	11.77	9.53	10.29	10.38	11.43	8.79	10.12
	May	9.87	11.70	11.04	11.87	10.61	11.40	9.48	9.89	10.11	10.95	8.75	10.65
	June	9.97	11.23	11.21	12.23	10.17	11.35	9.74	10.01	10.12	11.04	8.58	10.09
	July	R9.94	R11.70	R11.71	12.12	R10.21	R11.36	R9.83	10.04	R10.24	11.04	R9.36	10.34
	August	9.71	11.48	11.67	12.27	10.41	11.45	9.57	10.19	10.20	11.18	8.94	9.98
	September	10.11	11.11	11.64	12.50	10.25	11.55	10.04	10.29	10.33	11.30	9.25	10.07

Note: Wholesale refers to the price of residual fuel sold to other refiners and resellers, including bulk plants, branded and unbranded jobbers, and other residual dealers. Retail refers to the price at which residual fuel oil is sold to ultimate consumers such as utilitity, industrial, institutional, commercial, and residential accounts.
R=Revised data.
Source: FEA mandatory survey of refiners and large resellers.

Aviation Fuels

Aviation Fuels
(Cents per gallon)

		Aviation Gasoline		Naphtha-Type*	Kerosene-Type	
		Wholesale	Retail	Retail	Wholesale	Retail
1975	July	40.6	40.6	31.4	29.8	29.2
	August	41.3	42.1	31.0	32.1	29.5
	September	41.2	39.9	30.5	31.5	29.6
	October	41.1	41.2	30.5	31.7	30.0
	November	39.7	42.1	30.7	31.6	30.2
	December	40.9	40.9	31.0	31.9	30.5
1976	January	41.4	41.2	30.9	30.6	31.3
	February	41.2	42.0	31.2	31.1	31.2
	March	41.1	41.9	31.4	31.2	30.7
	April	41.2	42.5	30.4	31.9	30.5
	May	42.1	43.1	31.0	33.0	30.2
	June	42.6	42.3	31.3	32.1	30.3
	July	43.6	44.2	R31.1	R32.9	30.8
	August	43.7	44.1	31.7	32.1	31.1
	September	43.6	44.7	32.3	32.6	31.4

*Nearly all naptha-type aviation fuels are sold directly to the Defense Fuel Supply Center. Consequently, wholesale prices are not applicable.
Note: Wholesale refers to the price of aviation fuel sold to refiners and resellers, including bulk plants, branded and unbranded jobbers, and aviation fuel distributors. Retail refers to the price of aviation fuel sold to ultimate consumers, including commercial airline and military accounts.
R=Revised data.
Source: FEA mandatory survey of refiners and large resellers.

Crude Oil

Domestic Crude Petroleum Prices at the Wellhead*

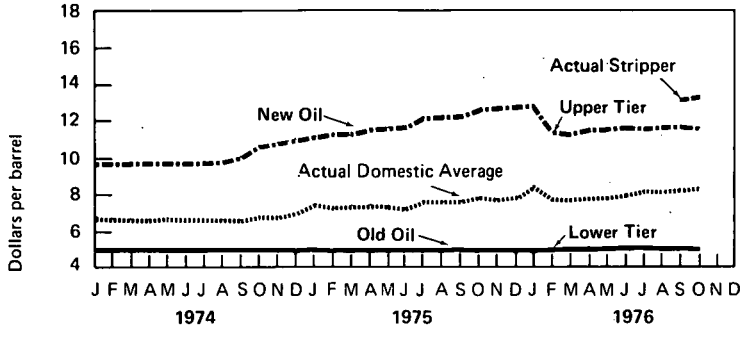
		Old	New	Domestic Average
		Dollars per barrel		
1974	January	5.03	9.82	6.95
	February	5.03	9.87	6.87
	March	5.03	9.88	6.77
	April	5.03	9.88	6.77
	May	5.03	9.88	6.87
	June	5.03	9.95	6.85
	July	5.03	9.95	6.80
	August	5.03	9.98	6.71
	September	5.03	10.10	6.70
	October	5.03	10.74	6.97
	November	5.03	10.90	6.97
	December	5.03	11.08	7.09
	AVG.	**5.03**	**10.13**	**6.87**
1975	January	5.05	11.28	7.61
	February	5.03	11.39	7.47
	March	5.03	11.47	7.57
	April	5.03	11.64	7.55
	May	5.03	11.69	7.52
	June	5.03	11.73	7.49
	July	5.03	12.30	7.75
	August	5.03	12.38	7.73
	September	5.04	12.46	7.75
	October	5.03	12.73	7.83
	November	5.03	12.89	7.80
	December	5.03	12.95	7.93
	AVG.	**5.03**	**12.03**	**7.67**
1976	January	5.02	12.99	8.63

(Table continued in next column)

		Lower Tier**	Upper Tier**	Domestic Average
		Dollars per barrel		
1976	February	5.06	11.47	7.87
	March	5.07	11.39	7.79
	April	5.07	11.52	7.86
	May	5.13	11.55	7.89
	June	5.15	11.60	7.99
	July	5.19	11.59	8.04
	August	5.18	11.62	8.03

	Lower Tier**	Upper Tier**	Actual Stripper†	Actual Domestic Average††	Imputed Domestic Average††
	Dollars per barrel				
September	5.17	11.65	13.21	***8.39	***8.19
October	5.16	11.62	13.35	***8.45	***8.23

Crude Oil Wellhead Price



*See Explanatory Note 17. **See definitions. ***Preliminary figure based on early reports. †Stripper oil was exempt from price controls beginning September 1, 1976. From February through August 1976, stripper oil was subject to upper tier price ceilings. ††The actual domestic average price represents the average price at which all domestic crude oil is purchased. The imputed domestic average price is the average price used to establish ceiling prices for domestic crude oil in accordance with the provisions of the Energy Conservation and Production Act. It is calculated as the weighted average of lower tier, upper tier, and an imputed stripper crude oil price. The imputed stripper crude oil price is equal to $11.63 per barrel plus the difference between the composite price of crude oil in August 1976 (excluding stripper oil) and the composite price of crude oil in the month of measurement (excluding stripper oil).
Sources: January 1974 through January 1976—FEA Crude Petroleum Production Monthly Report; February 1976 forward—FEA Domestic Crude Oil Purchasers Report.

Percentages of Domestic Production Sold at the Wellhead

		Old Oil	New Oil	Released	Stripper
1975	January*	58	19	10	12
	February*	61	17	9	12
	March	60	18	10	12
	April	61	17	9	12
	May	62	17	8	13
	June	63	16	8	13
	July	62	16	8	14
	August	63	16	7	14
	September*	63	15	7	14
	October	63	16	7	14
	November	64	15	7	14
	December	63	16	7	14
	AVERAGE	62	16	8	13
1976	January	54	21	10	15
		Lower Tier	Upper Tier		
	February	56	30	–	14
	March	57	29	–	14
	April*	57	29	–	15
	May	57	29	–	14
	June	56	29	–	15
	July	56	30	–	14
	August	56	30	–	14
		Lower Tier	Upper Tier		Stripper
	September**	53	34		13
	October**	53	35		13
	10 mo	56			

*Totals do not add to 100 due to rounding.
**Preliminary.
Sources: January 1975 through January 1976—FEA Crude Petroleum Production Monthly Report; February 1976 forward—FEA Domestic Crude Oil Purchasers Report for Lower Tier percentages, FEA estimates for Upper Tier and Stripper percentages.

Crude Oil (Continued)

Entitlement Prices*

		Dollars
1974	November	5.00
	December	5.00
1975	January	6.00
	February	6.75
	March	7.31
	April	7.29
	May	7.39
	June	7.82
	July	8.13
	August	8.31
	September	8.31
	October	8.62
	November	8.94
	December	8.55
1976	January	8.09
	February	7.85
	March	7.89
	April	7.85
	May	7.82
	June	7.91
	July	7.80
	August	8.02
	September	7.80
	October	7.84

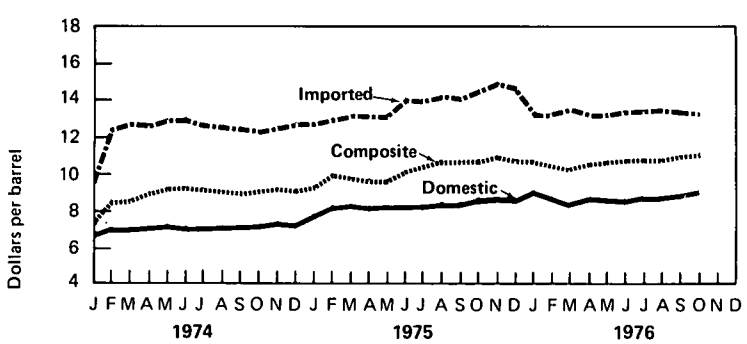
*See defintions.
Source: FEA.

Refiner Acquisition Cost of Crude Petroleum*

		Domestic	Imported	Composite
		Dollars per barrel		
1974	January	6.72	9.59	7.46
	February	7.08	12.45	8.57
	March	7.05	12.73	8.68
	April	7.21	12.72	9.13
	May	7.26	13.02	9.44
	June	7.20	13.06	9.45
	July	7.19	12.75	9.30
	August	7.20	12.68	9.17
	September	7.18	12.53	9.13
	October	7.26	12.44	9.22
	November	7.46	12.53	9.41
	December	7.39	12.82	9.28
	AVERAGE	**7.18**	**12.52**	**9.07**
1975	January	7.78	12.77	9.48
	February	8.29	13.05	10.09
	March	8.38	13.28	9.91
	April	8.23	13.26	9.83
	May	8.33	13.27	9.79
	June	8.33	14.15	10.33
	July	8.37	14.03	10.57
	August	8.48	14.25	10.81
	September	8.49	14.04	10.79
	October	8.68	14.66	10.85
	November	8.67	15.04	11.05
	December	8.66	14.81	10.98
	AVERAGE	**8.39**	**13.93**	**10.38**
1976	January	9.14	13.27	10.76
	February	8.67	13.26	10.54
	March	8.48	13.51	10.44
	April	8.66	13.39	10.63
	May	8.62	13.41	10.66
	June	8.60	13.48	10.88
	July	8.72	13.51	10.97
	August	8.65	13.58	10.78
	September	R8.95	R13.47	11.08
	October	**9.05	**13.45	**11.18
	Nov			
	Dec			11.38

*See Explanatory Note 18.
**Preliminary data.
R=Revised data.
Source: FEA.

Crude Oil Refiner Acquisition Cost



Crude Oil (Continued)

Estimated Landed Cost of Imported Crude Petroleum From Selected Countries*

		Algeria	Canada	Indonesia	Iran	Nigeria	Saudi Arabia	U.A. Emirates	Venezuela
					Dollars per barrel				
1974	January	NA	6.70	NA	8.53	12.13	NA	NA	10.28
	February	NA	10.90	NA	12.11	12.74	NA	NA	11.31
	March	NA	11.14	12.13	13.02	13.26	NA	NA	11.78
	April	13.63	11.02	12.49	12.83	13.67	11.59	NA	11.38
	May	14.67	11.47	12.95	13.84	13.83	11.53	NA	11.28
	June	14.43	12.56	13.21	13.44	13.03	11.32	13.06	10.39
	July	13.65	12.65	13.77	13.02	12.75	11.97	12.34	10.64
	August	13.96	12.49	14.38	12.31	12.70	12.16	12.69	11.20
	September	13.83	12.51	13.42	11.87	12.28	11.45	NA	11.01
	October	13.20	12.53	14.24	12.07	12.12	11.51	12.84	10.95
	November	13.43	12.33	13.45	12.15	12.83	12.15	13.54	11.15
	December	13.08	12.15	14.15	11.63	12.88	11.75	14.59	11.37
1975	January	12.72	12.43	13.30	12.11	12.07	12.07	13.14	11.37
	February	12.11	12.15	13.52	11.86	12.18	11.94	12.67	11.56
	March	12.46	12.79	13.94	12.08	12.56	11.78	13.40	11.66
	April	12.36	12.95	13.71	12.34	12.46	12.16	12.55	11.61
	May	12.41	12.08	13.71	11.93	12.34	12.27	13.29	11.54
	June	12.37	11.90	13.73	12.51	12.49	11.93	12.48	11.51
	July	12.69	12.15	13.98	11.83	12.37	12.08	12.78	11.46
	August	12.68	12.27	13.85	12.17	12.32	12.10	12.60	11.44
	September	12.52	12.63	13.75	11.97	12.42	12.17	12.49	11.42
	October	13.45	13.02	14.00	12.27	13.18	12.64	12.85	12.08
	November	13.28	14.00	13.81	12.47	13.37	12.58	13.23	12.38
	December	13.46	13.96	13.92	13.01	13.57	12.93	13.21	12.31
1976	January	13.56	12.95	13.89	13.01	13.61	13.18	13.50	11.60
	February	13.57	13.24	13.94	12.87	13.52	13.21	13.36	12.09
	March	13.83	13.30	13.94	12.77	13.62	13.18	13.37	11.71
	April	13.73	13.61	13.78	12.91	13.60	13.11	13.18	11.95
	May	13.47	13.62	13.84	12.82	13.62	13.05	13.39	11.61
	June	13.75	14.19	13.84	13.00	13.78	13.14	13.09	11.55
	July	13.77	13.79	13.80	12.76	13.81	13.02	13.45	11.44
	August	13.91	13.78	13.78	13.09	13.87	13.03	13.23	11.77
	September	14.03	13.70	13.80	12.78	13.82	12.87	13.44	11.98
	October	13.81	13.71	13.84	12.73	13.99	12.87	13.22	11.84

*See Explanatory Note 19.
Source: FEA.

Unrecouped Costs for Refined Products for 30 Largest Refiners

		Distillate *	Motor Gasoline	Aviation Jet Fuel**	Other Products	Total
		Millions of dollars				
1974	January	116	91		43	250
	February	184	87		175	446
	March	198	85		237	520
	April	223	215		346	783
	May	261	255		446	963
	June	326	394		630	1,350
	July	355	325		648	1,327
	August	392	349		665	1,405
	September	409	431		650	1,490
	October	295	424		531	1,250
	November	245	475		595	1,315
	December	209	413		492	1,114
1975	January	254	431		672	1,357
	February	300	418		790	1,508
	March	282	452		966	1,700
	April	302	485		807	1,594
	May	292	370		771	1,433
	June	284	266		785	1,334
	July	233	219		624	1,075
	August	280	344		583	1,208
	September	347	335		661	1,342
	October	338	245		673	1,255
	November	426	275		796	1,497
	December	446	211		826	1,483
1976	January	336	242	131	515	1,224
	February	279	336	145	456	1,216
	March	263	316	163	456	1,198
	April	237	398	180	524	1,339
	May	264	632	161	446	1,503
	June	—	628	135	349	1,112
	July	—	587	129	384	1,100
	August	—	679	125	352	1,156
	September	—	619	134	340	1,093

*Includes No. 2 heating oil and No. 2 diesel fuel only. After May 1976, reporting of the distillate bank is no longer required due to decontrol of middle distillates.
**Prior to January 1976 refiners were not required to maintain separate banks for aviation jet fuel.
Source: FEA.

Natural Gas

Natural Gas Prices Reported by Major Interstate Pipeline Companies

		PURCHASES			SALES		
		From Domestic Producers	From Canadian and Mexican Sources	Total Purchases	To Industrial Users*	To Resellers**	Total Sales
		Cents per thousand cubic feet					
1974	January	24.3	42.7	25.7	48.1	55.0	55.1
	February	25.4	43.2	26.8	49.8	56.4	56.4
	March	25.7	43.2	27.0	50.8	56.9	56.9
	April	25.8	46.4	27.4	49.3	57.6	57.4
	May	25.7	49.3	27.5	49.9	58.6	57.9
	June	26.0	47.7	27.5	50.8	59.4	58.5
	July	26.3	58.7	28.6	52.5	62.0	61.1
	August	26.1	57.5	28.4	55.2	64.4	63.5
	September	27.3	58.8	29.5	54.7	65.2	64.3
	October	27.5	58.9	29.9	56.3	64.4	64.0
	November	28.5	70.9	31.7	58.7	66.8	66.6
	December	32.6	74.5	35.8	60.3	67.2	67.4
1975	January	29.8	104.0	35.2	67.6	71.1	71.4
	February	29.5	105.8	35.2	70.1	74.1	74.4
	March	31.6	102.5	37.0	70.4	77.8	77.9
	April	32.9	102.8	38.3	71.1	82.3	81.9
	May	34.7	100.6	39.8	71.1	83.7	82.8
	June	35.3	98.3	40.2	72.2	85.2	84.0
	July	36.9	101.1	41.8	73.9	84.7	83.6
	August	35.5	141.0	43.3	73.4	85.6	84.3
	September	36.5	141.2	44.5	72.8	85.9	84.6
	October	36.1	140.1	44.3	77.2	86.1	85.6
	November	36.5	162.5	46.7	77.8	86.9	86.6
	December	35.9	161.8	46.0	81.1	79.6	80.1
1976	January	38.6	164.0	48.6	87.5	88.7	89.2
	February	39.5	165.3	49.5	87.7	92.3	92.7
	March	39.5	164.5	49.7	86.4	89.8	90.2
	April	40.6	164.3	51.2	88.6	100.2	99.7
	May	42.4	165.1	52.5	86.9	98.3	97.6
	June	43.7	166.6	53.7	89.5	98.2	98.5

*Represents direct sales by pipelines to industrial users. Does not include sales to industrial users by resellers.
**Includes the cost of gas to the distributing utility at entrance of distribution system or point of receipt.
Source: Federal Power Commission.

Average Retail Prices for Natural Gas Sold to Residential Customers for Heating Use

		Price
		Cents per thousand cubic feet
1974	January	113.3
	February	115.2
	March	116.9
	April	118.2
	May	119.9
	June	120.3
	July	122.0
	August	124.2
	September	125.6
	October	127.4
	November	131.4
	December	134.2
1975	January	137.9
	February	141.3
	March	142.7
	April	147.1
	May	150.1
	June	152.1
	July	151.1
	August	151.8
	September	155.7
	October	156.3
	November	162.3
	December	166.2
1976	January	167.4
	February	171.1
	March	172.9
	April	174.2
	May	176.6
	June	178.9
	July	180.2
	August	181.5
	September	186.7
	October	189.4
	November	192.7

Source: Bureau of Labor Statistics.

Utility Fossil Fuels

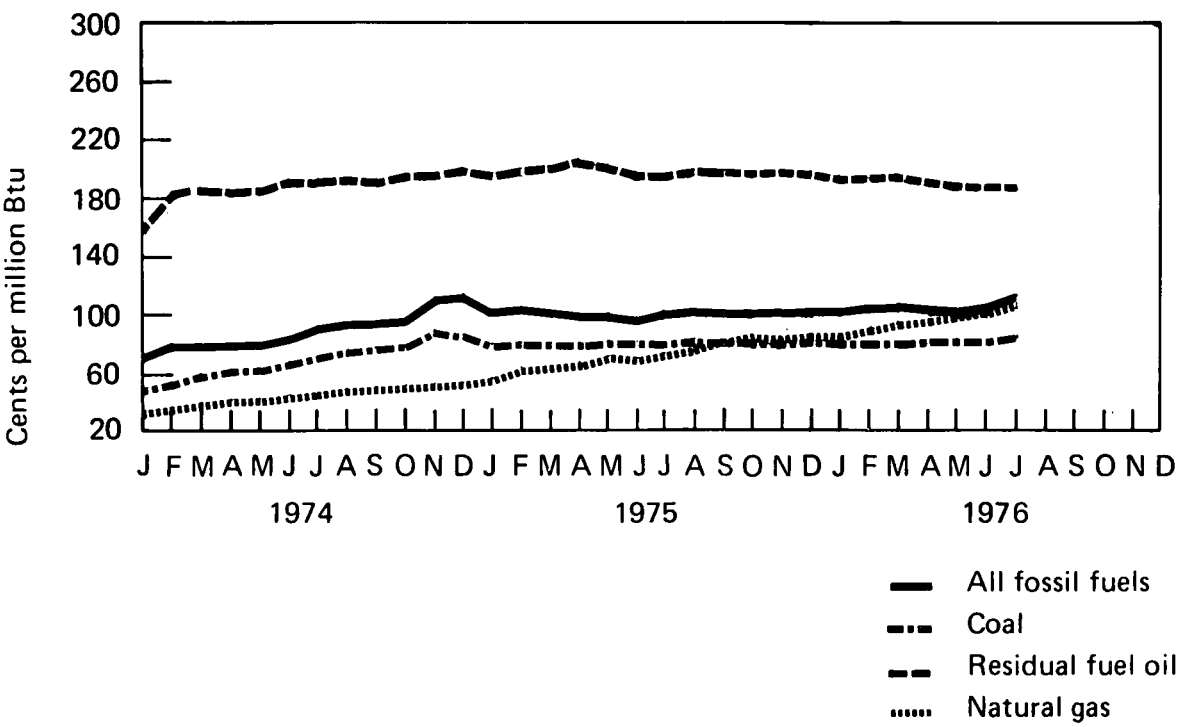
COST OF FOSSIL FUELS DELIVERED TO STEAM ELECTRIC UTILITY PLANTS

All Fossil Fuels*

Cents per million Btu	1975							1976					
Region	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
New England	189.5	188.0	182.9	182.3	181.2	177.6	181.3	184.6	182.3	184.3	174.6	174.2	172.4
Middle Atlantic	154.5	144.5	132.7	133.7	140.8	140.8	143.6	142.2	136.8	136.9	136.6	137.9	144.5
East North Central	89.2	90.1	88.2	87.0	89.5	92.6	89.9	90.0	88.3	91.3	92.1	93.8	100.9
West North Central	63.0	62.7	63.9	62.6	62.5	65.7	72.7	67.4	67.5	67.2	68.9	69.1	70.8
South Atlantic	126.8	125.2	124.4	118.4	117.0	121.3	122.0	122.7	118.3	119.2	120.0	118.9	130.7
East South Central	86.2	84.5	85.2	83.8	84.5	85.5	88.5	88.0	87.4	90.4	90.9	90.0	93.2
West South Central	76.0	77.5	79.1	79.6	77.0	82.8	88.0	88.2	91.7	93.5	94.6	98.6	101.2
Mountain	51.8	50.4	55.0	50.1	52.3	55.6	50.4	48.3	58.4	56.1	50.1	53.0	55.4
Pacific	147.1	171.3	174.5	177.2	206.6	222.7	214.0	206.5	211.3	196.2	180.3	177.2	180.2
NATIONAL AVG.	102.5	103.8	103.7	101.2	102.4	106.9	107.3	107.6	107.8	106.4	105.8	107.0	113.2

*See Explanatory Note 20.

National Average



Coal

Cents per million Btu	1975						1976						
Region	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
New England	119.2	127.3	120.4	128.7	127.6	120.8	124.2	122.7	119.4	124.8	127.0	122.3	127.9
Middle Atlantic	105.5	103.8	98.6	101.8	106.1	104.0	102.8	103.4	101.7	100.2	101.7	102.5	107.5
East North Central	82.3	84.3	83.4	82.1	83.8	85.7	83.1	83.1	82.7	85.0	86.8	86.6	92.4
West North Central	60.8	60.7	61.3	61.2	60.6	58.2	59.2	60.2	62.3	64.1	65.8	64.7	65.3
South Atlantic	101.6	101.4	102.4	98.6	98.5	100.1	98.3	99.2	99.7	100.8	100.8	100.7	104.4
East South Central	79.5	79.1	80.8	80.7	82.3	81.9	83.9	83.5	82.6	83.4	85.1	84.5	85.5
West South Central	24.0	24.0	24.0	24.0	24.0	24.0	26.4	26.4	26.4	26.4	26.4	27.3	32.4
Mountain	33.1	32.2	32.8	31.7	33.5	36.1	34.1	33.0	42.4	34.6	32.2	35.9	35.3
Pacific	58.2	58.8	58.9	58.4	59.5	58.9	72.7	76.0	74.5	75.5	75.7	75.2	75.8
NATIONAL AVG.	**80.8**	**82.1**	**82.1**	**81.5**	**81.7**	**82.2**	**80.2**	**81.4**	**83.3**	**83.7**	**84.6**	**84.6**	**85.7**

Residual Fuel Oil*

Cents per million Btu	1975						1976						
Region	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
New England	196.3	192.6	187.9	184.1	184.8	181.0	182.5	185.4	183.5	185.7	170.0	177.8	175.4
Middle Atlantic	200.4	199.3	191.2	192.2	191.5	191.6	191.3	179.9	191.8	197.1	190.3	187.3	184.3
East North Central	185.2	191.7	205.9	189.7	211.4	192.4	197.0	193.4	200.9	198.4	202.8	211.8	214.8
West North Central	161.1	157.5	150.3	153.5	161.6	157.1	173.1	162.2	153.4	153.0	145.6	148.8	151.3
South Atlantic	185.4	183.8	181.5	180.7	179.8	173.0	174.6	177.5	178.6	179.6	171.3	171.9	174.1
East South Central	167.8	175.0	174.4	175.5	180.4	171.4	172.8	173.7	174.3	176.0	170.9	166.9	171.0
West South Central	186.2	185.2	174.4	168.4	189.2	187.9	195.3	190.7	183.0	187.4	182.0	176.4	173.3
Mountain	209.1	221.3	223.7	210.3	195.8	202.3	206.8	203.5	205.0	220.8	206.4	212.4	217.2
Pacific	253.8	258.1	257.9	255.5	261.9	259.7	246.6	240.7	240.3	232.7	229.2	229.1	228.7
NATIONAL AVG.	**198.9**	**200.8**	**200.5**	**197.0**	**200.5**	**198.1**	**194.1**	**195.4**	**197.7**	**196.7**	**188.1**	**187.4**	**187.0**

Natural Gas**

Cents per million Btu	1975						1976						
Region	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY
New England	122.1	154.1	137.7	135.6	133.8	157.7	166.1	166.1	151.6	134.5	144.0	153.7	154.1
Middle Atlantic	91.2	87.6	87.6	90.5	103.1	105.0	107.8	195.8	106.3	150.3	111.5	108.0	114.8
East North Central	103.4	104.6	114.0	120.2	128.3	136.8	126.8	124.4	125.0	127.7	135.3	139.8	138.2
West North Central	59.2	56.9	57.8	55.4	55.8	55.9	56.1	61.6	61.5	68.0	73.4	78.1	78.4
South Atlantic	68.9	69.7	76.4	79.6	78.5	80.8	75.1	82.0	75.5	78.2	84.0	83.1	88.7
East South Central	91.0	95.9	110.3	105.5	120.2	146.6	156.6	157.4	147.5	148.0	128.6	123.0	136.9
West South Central	72.7	75.7	77.9	79.7	77.6	80.3	83.5	87.3	90.8	92.3	94.0	98.1	100.4
Mountain	71.8	71.1	78.6	82.0	86.2	90.4	86.2	85.5	87.4	90.4	87.4	89.5	90.8
Pacific	89.7	111.1	115.2	122.4	136.9	151.1	141.2	151.6	149.5	152.6	147.3	147.6	146.6
NATIONAL AVG.	**74.8**	**79.1**	**83.8**	**85.5**	**83.5**	**86.1**	**86.5**	**92.1**	**94.9**	**97.4**	**100.8**	**104.4**	**106.2**

***See Explanatory Note 20.**

**Includes small quantities of coke oven gas, refinery gas, and blast furnace gas.

Source: Federal Power Commission.

Utility Fossil Fuels (Continued)

U.S. Average Delivered Prices of Coal at Utilities

		Contract	Spot
		In dollars per short ton	
1974	January	9.83	17.02
	February	10.40	20.57
	March	10.63	22.54
	April	11.28	23.70
	May	11.80	24.21
	June	11.87	25.84
	July	12.05	27.99
	August	12.50	28.87
	September	12.89	30.64
	October	13.30	30.67
	November	14.16	31.95
	December	14.20	31.05
1975	January	14.57	28.12
	February	15.71	25.93
	March	15.68	25.02
	April	15.88	24.52
	May	16.45	23.78
	June	16.40	23.36
	July	16.06	22.35
	August	16.65	22.39
	September	16.76	22.46
	October	16.72	22.52
	November	16.79	22.50
	December	16.90	22.40
1976	January	16.53	21.75
	February	17.04	21.23
	March	17.65	21.36
	April	17.76	21.43
	May	18.12	21.17
	June	18.05	20.88
	July	17.93	21.00

Source: Federal Power Commission.

Petroleum Consumption

During the first 10 months of 1976, France consumed 9.1 percent more petroleum than during the comparable period in 1975, while Italy showed a minor drop of 0.5 percent. For the 9-month period, January through September, West Germany registered an 8.5-percent increase in consumption over the same period in 1975, Japan, a 6.6-percent increase, and Canada, a 2.3-percent increase. During the first 8 months of 1976, consumption in the United Kingdom dropped 2.6 percent below the level for the corresponding period in 1975.

Crude Oil Production

Total world crude oil production reached another record high in October of 59.8 million barrels per day. The Organization of Petroleum Exporting Countries (OPEC) accounted for 54.9 percent of this amount. OPEC shut-in production capacity was only 5.6 million barrels per day or 14.7 percent of its estimated capacity. By far the greater proportion of unused capacity is in the Arab sector, 4.7 million barrels per day, compared with 945,000 barrels per day in the non-Arab sector.

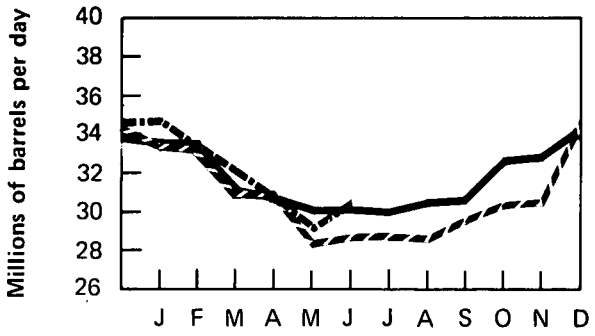
Petroleum Consumption

Petroleum Consumption for Major Free World Industrialized Countries

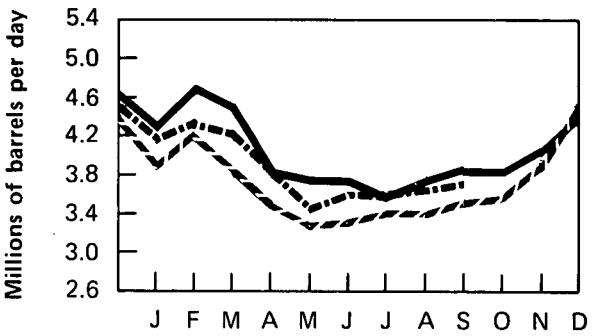
		Total IEA*	Japan**	West Germany	France***	United Kingdom	Canada	Italy†	Other IEA††
					Thousands of barrels per day				
1974	Jan	33,700	4,273	2,556	2,523	2,045	1,823	1,755	3,962
	Feb	33,700	4,709	1,969	2,389	2,127	1,863	1,760	3,906
	Mar	31,200	4,508	2,173	2,249	2,133	1,659	1,579	3,044
	Apr	30,600	3,805	2,539	1,970	1,899	1,560	1,421	3,448
	May	30,000	3,718	2,403	1,915	1,704	1,577	1,349	3,523
	June	30,100	3,710	2,414	2,103	1,545	1,455	1,314	3,545
	July	30,000	3,574	2,548	1,703	1,531	1,534	1,368	3,096
	Aug	30,600	3,787	2,476	1,506	1,513	1,463	1,287	3,524
	Sept	30,700	3,868	2,473	1,996	1,663	1,415	1,527	3,730
	Oct	32,800	3,843	2,613	2,045	2,049	1,680	1,569	3,996
	Nov	33,000	4,076	2,432	2,260	2,108	1,714	1,580	3,739
	Dec	34,300	4,401	2,261	2,492	1,983	1,831	1,753	4,058
	AVG.	**31,775**	**4,019**	**2,408**	**2,094**	**1,857**	**1,630**	**1,521**	**3,687**
1975	Jan	33,600	3,850	2,183	2,190	1,981	1,691	1,792	4;120
	Feb	33,600	4,242	2,455	2,243	1,906	1,872	1,767	4,274
	Mar	31,000	3,978	2,234	1,952	1,731	1,558	1,558	3,625
	Apr	30,800	3,448	2,431	2,202	1,826	1,592	1,530	3,932
	May	28,200	3,296	2,253	1,640	1,482	1,474	1,174	3,403
	June	28,800	3,325	2,106	1,642	1,414	1,550	1,289	3,505
	July	28,900	3,437	2,319	1,491	1,322	1,537	1,234	3,289
	Aug	28,700	3,397	2,360	1,300	1,208	1,444	1,105	3,419
	Sept	29,800	3,569	2,309	1,785	1,502	1,474	1,465	3,712
	Oct	30,500	3,584	2,328	1,914	1,704	1,555	1,679	3,306
	Nov	30,600	3,940	2,361	2,074	1,723	1,577	1,448	3,830
	Dec	34,600	4,519	2,502	2,653	1,821	R1,880	1,600	4,316
	AVG.	**30,745**	**3,712**	**2,319**	**1,921**	**1,613**	**R1,594**	**1,468**	**3,749**
1976	Jan	34,700	4,143	2,459	2,432	1,680	R1,784	1,748	4,378
	Feb	33,400	4,382	2,490	2,492	1,866	R1,754	1,713	3,879
	Mar	32,300	4,286	2,742	2,372	1,879	R1,747	1,621	2,745
	Apr	30,900	3,806	2,332	2,117	1,661	R1,518	1,409	3,583
	May	29,200	3,440	2,314	1,796	1,418	R1,509	1,238	3,261
	June	30,500	3,635	2,388	1,604	1,420	R1,560	1,208	3,463
	July	NA	3,607	2,624	1,624	1,338	R1,531	1,247	NA
	Aug	NA	3,643	R2,514	R1,668	1,262	1,577	R1,272	NA
	Sept	NA	3,738	2,521	R1,966	NA	1,515	1,562	NA
	Oct	NA	NA	NA	1,925	NA	NA	1,498	NA
	AVG. (Year to date)	**31,829**	**3,851**	**2,488**	**1,997**	**1,563**	**1,610**	**1,450**	**3,548**

Note: All recent figures are estimates.
*The 19 signatory nations of the International Energy Agency (IEA) are: Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States. Except for the United States, inland consumption excludes bunkers, refinery fuel, and losses.
**Excludes liquefied petroleum gases and condensates. ***Not a member of IEA. †Principal products only. ††Excludes the United States. NA=Not available. R=Revised data. Source: Central Intelligence Agency.

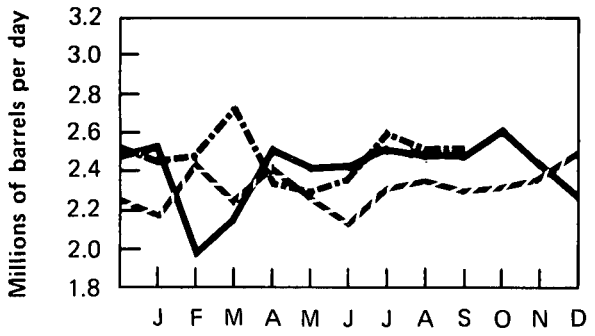
Total IEA



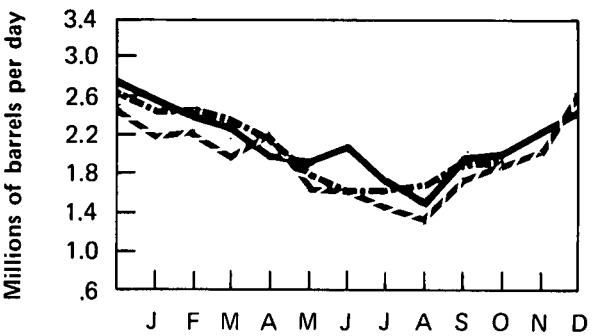
Japan*



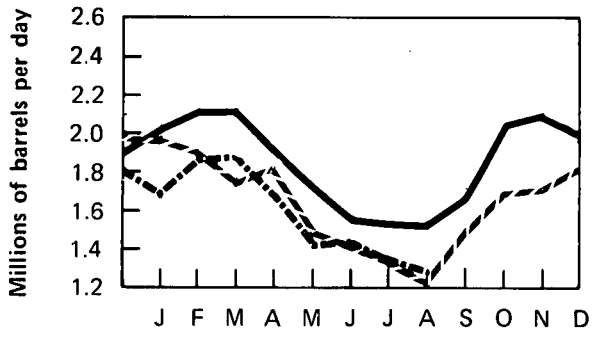
West Germany



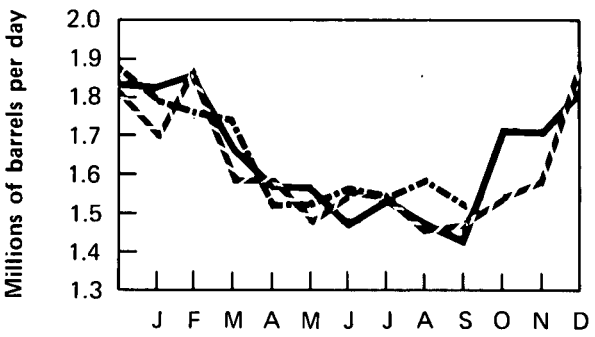
France**



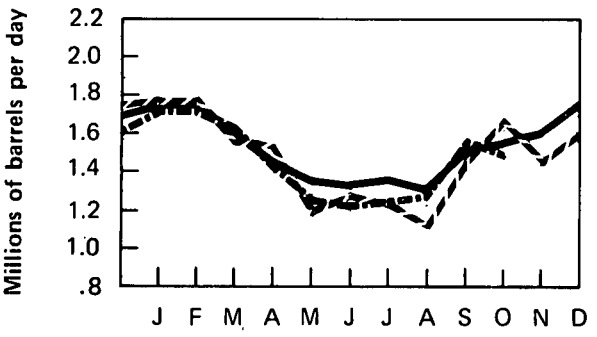
United Kingdom



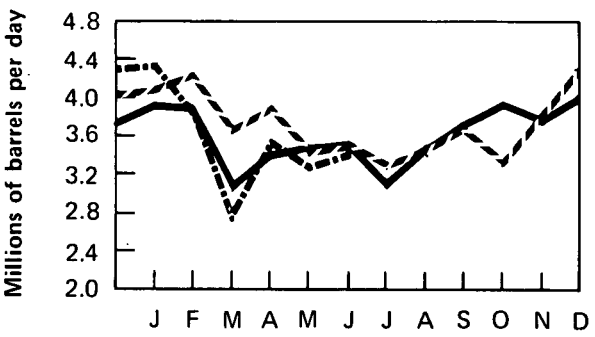
Canada



Italy***



Other IEA†



*Excludes liquefied petroleum gases and condensates.
**Not a member of IEA.
***Principal products only.
†Excludes the United States.

1974
1975
1976

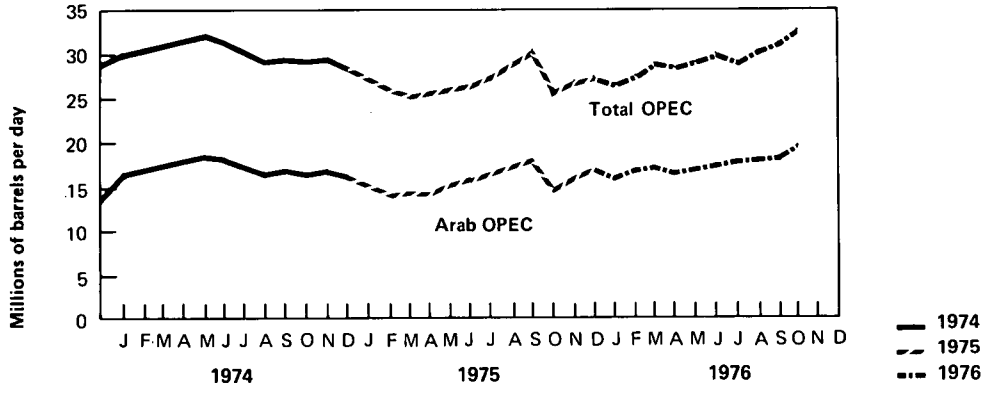
Crude Oil Production

Crude Oil Production for Major Petroleum Exporting Countries — October 1976

Country	Production				Production Capacity	Production Shut in
	1973	1974	1975	1976 October**	October	October
	Thousands of barrels per day					Percent
Algeria	1,070	960	930	1,000	1,000	0
Iraq	2,015	1,975	2,250	2,400	3,000	20.0
Kuwait*	3,020	2,545	2,100	2,660	3,500	24.0
Libya	2,175	1,520	1,520	2,100	2,500	16.0
Qatar	570	520	440	460	700	34.3
Saudi Arabia*	7,600	8,480	7,080	9,250	11,500	19.6
United Arab Emirates	1,530	1,680	1,700	2,010	2,380	15.5
Subtotal: Arab OPEC	**17,980**	**17,680**	**16,020**	**19,880**	**24,580**	**19.1**
Ecuador	210	175	160	200	225	11.1
Gabon	150	200	220	220	250	12.0
Indonesia	1,340	1,375	1,310	1,540	1,700	9.4
Iran	5,860	6,020	5,350	6,510	6,600	1.2
Nigeria	2,055	2,255	1,790	2,100	2,500	16.0
Venezuela	3,365	2,975	2,350	2,360	2,600	9.2
Subtotal: Non-Arab OPEC	**12,980**	**13,000**	**11,180**	**12,930**	**13,875**	**6.8**
Total: OPEC	**30,960**	**30,680**	**27,200**	**32,810**	**38,455**	**14.7**
Canada	1,800	1,695	1,470	1,358	1,800	24.6
Mexico	465	580	720	900	1,000	10.0
Total: OPEC, Canada Mexico	**33,225**	**32,955**	**29,390**	**35,068**	**41,255**	**15.0**
Total World	**55,740**	**55,885**	**53,160**	**59,790**		

*Includes about one-half of the former Kuwait-Saudi Arabia Neutral Zone. Production in October 1976 amounted to approximately 560,000 barrels per day.
**Estimate.
Sources: Central Intelligence Agency and National Energy Board of Canada.

OPEC Countries Crude Oil Production



Definitions

Base Production Control Level

1. Prior to February 1, 1976: the total number of barrels of domestic crude oil produced and sold from a particular property in the same month of 1972. If domestic crude oil was not produced and sold from that property in every month of 1972, the total number of barrels of domestic crude oil produced and sold from that property in 1972, divided by 12.

2. Effective February 1, 1976: the total number of barrels of old crude oil produced and sold from the property during calendar year 1975, divided by 365, and multiplied by the number of days in the particular month during 1975. A producer may elect to use the total number of barrels of crude oil produced and sold from the property during calendar year 1972, divided by 366, and multiplied by the number of days in the particular month during 1972.

Branded Independent Marketer

A firm which is engaged in the marketing or distribution of refined petroleum products pursuant to (1) an agreement or contract with a refiner (or a firm which controls, is controlled by, or is under common control with such refiner) to use a trademark, trade name, service mark, or other identifying symbol or name owned by such refiner (or any such firm), or (2) an agreement or contract under which any such firm engaged in the marketing or distribution of refined petroleum products is granted authority to occupy premises owned, leased, or in any way controlled by a refiner (or firm which controls, is controlled by, or is under common control with such refiner), but which is not affiliated with, controlled by, or under common control with any refiner (other than by means of a supply contract, or an agreement or contract described in parts (1) or (2) of this definition), and which does not control such refiner.

Ceiling Price

The maximum permissible selling price, prior to February 1, 1976, for a particular grade of domestic crude oil in a particular field is the May 15, 1973, posted price plus $1.35 per barrel.

Controlled Crude Oil

Crude oil that was domestically produced prior to February 1, 1976, subject to the ceiling price for crude oil. For a particular property which is not a stripper well lease, the volume of controlled oil equals the base production control level minus an amount of released oil equal to the new oil production from that property.

Crude Oil Domestic Production

The volume of crude oil flowing out of the ground. Domestic production is measured at the wellhead and includes lease condensate, which is a natural gas liquid recovered from lease separators or field facilities.

Crude Oil Imports

The monthly volume of crude oil imported which is reported by receiving refineries, including crude oil entering the U.S. through pipelines from Canada.

Crude Oil Input to Refineries

Total crude oil used as input for the refining process, less crude oil lost or used for refinery fuel.

Crude Oil Stocks

Stocks held at refineries and at pipeline terminals.

Cumulative Deficiency

A measure of the cumulative deficit of production below the base production control level after the first month in which new oil was produced and sold from a specific property.

Dealer Tankwagon (DTW) Price

The price at which a dealer purchases gasoline from a distributor or a jobber.

Distillate Fuel Oil

The lighter fuel oils distilled off during the refining process. Included are products known as ASTM grades Nos. 1 and 2 heating oils, diesel fuels, and No. 4 fuel oil. The major uses of distillate fuel oils include heating, fuel for on- and off-highway diesel engines, and railroad diesel fuel. Minor quantities of distillate fuel oils produced and/or held as stocks at natural gas processing plants are not included in this series.

Domestic Demand for Refined Petroleum Products

A calculated value, computed as domestic production plus net imports (imports less exports), less the net increase in primary stocks. It, therefore, represents the total disappearance of refined products from primary supplies.

Electricity Production

Production at electric utilities only. Does not include industrial electricity generation.

Entitlement Position

The monthly entitlement position of a refiner indicates whether he bought or sold entitlements in that month.

An entitlement is the right to process "deemed old oil," which is the sum of a refiner's receipts of "old" oil and a fraction of his receipts of "upper tier" crude oil. This fraction is set monthly by FEA. A refiner must purchase entitlements for the amount of his "deemed old oil" receipts in excess of the national domestic crude oil supply ratio (NDCOSR). The NDCOSR, as calculated by FEA, reflects the differences in costs to refiners of "old" oil, "upper tier" crude oil, and imported crude oil.

Entitlement Price

The price of an entitlement, fixed by FEA, is the exact differential as reported for the month between the weighted average cost per barrel to refiners of "old" oil and of imported crude oil, less 21 cents, such cost to be equivalent to the delivered cost to the refinery.

Firm Natural Gas Service

High priority gas service in which the pipeline company is under contract to deliver a specified volume of gas to the customer on a non-interruptible basis. Residential and small commercial facilities usually fall into this category.

Interruptible Natural Gas Service

Low priority gas service in which the pipeline company has the contractual option to temporarily terminate deliveries to customers by reason of claim of firm service customers or higher priority users. Large commercial facilities, industrial users, and electric utilities usually fall into this category.

Jet Fuel

Includes both naphtha-type and kerosene-type fuels meeting standards for use in aircraft turbine engines. Although most jet fuel is used in aircraft, some is used for other purposes, such as for generating electricity in gas turbines.

Jobber

A petroleum distributor who purchases refined product from a refiner or terminal operator for the purpose of reselling to retail outlets and commercial accounts or for the purpose of retailing through his own retail outlets.

Jobber Margin

The difference between the price at which a jobber purchases refined product from a refiner or terminal operator and the price at which the jobber sells to retail outlets. This does not reflect margins obtained by jobbers through retail sales or commercial accounts.

Jobber Price

The price at which a petroleum jobber purchases refined product from a refiner or terminal operator.

Landed Cost

The cost of imported crude oil equal to actual cost of crude at point of origin plus transportation cost to the United States.

Limited Work Authorization

A Limited Work Authorization (LWA) may be granted by the Atomic Safety and Licensing Board of the Nuclear Regulatory Commission to an applicant who wants to construct a nuclear powerplant providing that the project has been cleared for all requirements of the National Environmental Protection Act and that the geologic and topographic suitability of the reactor site has been found satisfactory. The LWA allows an applicant to proceed with site excavation, install temporary construction and service facilities, construct service roads, and erect structures and components not subject to normal quality assurance inspections. It may save a utility from 6 to 8 months in total construction time. However, because the ultimate approval of a construction permit is based on all evidence revealed during the licensing hearings, the successful award of an LWA is no guarantee that a construction permit will also be granted.

Line Miles of Seismic Exploration

The distance along the earth's surface that is covered by seismic traverses.

Lower Tier Crude Oil

Old crude oil.

Lower Tier Ceiling Price Determination

The lower tier ceiling price for a particular grade of domestic crude oil in a particular field is the sum of (1) the highest posted price at 6 a.m., local time, May 15, 1973, for transactions in that grade of crude oil in that field; or if there was no posted price in that field for that grade of domestic crude oil, the related price for that grade of domestic crude oil which is most similar in kind and quality in the nearest field for which prices were posted; and (2) $1.35 per barrel.

Major Brand

Lundberg Survey, Inc., defines major brand as an integrated company that produces, refines, transports, and markets in Interstate Commerce under its own brand(s) in 20 or more States.

Motor Gasoline Production

Total production of motor gasoline by refineries, measured at refinery outlet. Relatively small quantities of motor gasoline are produced at natural gas processing plants, but these quantities are not included.

Motor Gasoline Stocks

Primary motor gasoline stocks held by gasoline producers. Stocks at natural gas processing plants are not included.

Natural Gas Liquids (NGL)

Products obtained from natural gasoline plants, cycling plants, and fractionators after processing the natural gas. Included are ethane, liquefied petroleum (LP) gases (propane, butane, and propane-butane mixtures), natural gasoline, plant condensate, and minor quantities of finished products such as gasoline, special naphthas, jet fuel, kerosene, and distillate fuel oil.

New Crude Oil

1. Prior to February 1, 1976: the total number of barrels of domestic crude oil produced and sold in a specific month, less the base production control for that month and less the current cumulative deficiency.

2. Effective February 1,1976: the total number of barrels of domestic crude oil produced and sold in a specific month, less the property's base production control level for that month and less the current cumulative deficiency since February 1, 1976.

Nonbranded Independent Marketer

A firm which is engaged in the marketing or distribution of refined petroleum products, but which (1) is not a refiner, (2) is not a firm which controls, is controlled by, is under common control with, or is affiliated with a refiner (other than by means of a supply contract), and (3) is not a branded independent marketer.

Old Crude Oil

1. Prior to February 1, 1976: the total number of barrels of crude oil produced and sold from a property in a specific month, less the total number of barrels of new crude oil for that property in that month and less the total number of barrels of released crude oil for that property in that month.

2. Effective February 1,1976: the total number of barrels of crude oil produced and sold from a property in a specific month, less the total number of barrels of new crude oil for that property in that month.

Power Ascension Nuclear Powerplant

A nuclear powerplant that has been licensed by the Nuclear Regulatory Commission to operate, but which is in the initial testing phase during which production of electricity may not be continuous. In general, when the electric utility is satisfied with the plant's performance, it formally accepts the plant from the manufacturer, and places it in "commercial operation" status. A request is then submitted to the appropriate utility rate commission to include the powerplant in the rate base calculation.

Primary Stocks of Refined Petroleum Products

Stocks held at refineries, bulk terminals, and pipelines. They do not include stocks held in secondary storage facilities, such as those held by jobbers, dealers, independent marketers, and consumers.

Property

Prior to August 26, 1976, a property was defined as the right to produce domestic crude oil, which arises from a lease or from a fee interest. This definition was interpreted to apply only to a surface lease. In August 1976 the definition of a property was changed so that a producer may treat as a separate property each separate and distinct producing reservoir subject to the same right to produce crude oil, provided that such reservoir is recognized by the appropriate governmental regulatory authority as a producing formation that is separate and distinct from, and not in communication with, any other producing formation. Although this new definition was not implemented until August 26, 1976, it was made effective retroactively to Feburary 1, 1976. (F.R. 36171, August 26, 1976)

Recompletion Well

A well that is reentered and completed in a different reservoir or producing zone than the initial completion zone.

Refined Petroleum Products Imports

Imports (into the 50 States and the District of Columbia) of motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, liquefied petroleum gases, petrochemical feedstocks, special naphtha, lubricants, waxes, asphalt, natural gas, plant condensate, and unfinished oils. Included are imports of fuels into bonded storage and receipts from U.S. territories.

Refiner Acquisition Cost

The cost to the refiner, including transportation and fees, of crude petroleum. The composite cost is the average of domestic and imported crude costs and represents the amount of crude cost which refiners may pass on to their customers.

Released Crude Oil

An amount of crude oil produced from a property in a particular month prior to February 1, 1976, which is

equal to the total number of barrels of new crude oil produced and sold from that property in that month. The amount of released crude oil for a property in a particular month shall not exceed the base production control level for that property in that month.

Residual Fuel Oil

The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. Included are products known as ASTM grades Nos. 5 and 6 oil, heavy diesel oil, Navy Special Oil, Bunker C oil, and acid sludge and pitch used as refinery fuels. Residual fuel oil is used for the production of electric power, for heating, and for various industrial purposes.

Rotary Rig

Machine used for drilling wells that employs a rotating tube attached to a bit for boring holes through rock.

Separative Work Unit (SWU)

The measure of work required to produce enriched uranium from natural uranium. Enrichment plants separate natural uranium feed material into two groups, an enriched product group with a higher percentage of U-235 than the feed material and a depleted tails group with a lower percentage of U-235 than the feed material. To produce 1 kilógram of enriched uranium containing 2.8 percent U-235, and a depleted tails assay containing 0.3 percent U-235, it requires 6 kilograms of natural uranium feed and 3 kilograms of separative work units (3 SWU).

Stripper Well Property

A property whose average daily production of crude oil per well (excluding condensate recovered in nonassociated production) did not exceed 10 barrels per day during any preceding consecutive 12-month period beginning after December 31, 1972.

Synthetic Natural Gas (SNG)

A product resulting from the manufacture, conversion, or reforming of petroleum hydrocarbons which may be easily substituted for or interchanged with pipeline quality natural gas.

Uncontrolled Crude Oil

That portion of domestic crude oil production including new, released, and stripper oil which, before February 1, 1976, could be sold at a price exceeding the ceiling price.

Unrecouped Costs

Costs which have not been recovered in the current month's product prices but which have been "banked" for later use.

Upper Tier Crude Oil

Effective February 1, 1976, upper tier crude oil included new crude oil and crude oil produced from a stripper well lease. Effective September 1, 1976, upper tier crude oil includes new crude oil only.

Upper Tier Ceiling Price Determination

The upper tier ceiling price for a particular grade of domestic crude oil in a particular field is (1) the highest posted price on September 30, 1975, for transactions in that grade of crude oil in that field in September 1975, or if there was no posted price in that field for that grade of domestic crude oil, the related price for that grade of domestic crude oil which is most similar in kind and quality in the nearest field for which prices were posted; less (2) $1.32 per barrel.

Well

Hole drilled for the purpose of finding or producing crude oil or natural gas or providing services related to the production of crude oil or natural gas. Wells are classified as oil wells, gas wells, dry holes, stratigraphic tests, or service wells. This is a standard definition of the American Petroleum Institute.

Explanatory Notes

1. Domestic production of energy includes production of crude oil and lease condensate, natural gas (wet), and coal (anthracite, bituminous, and lignite), as well as electricity output from hydroelectric and nuclear powerplants and industrial hydroelectric power production. The volumetric data were converted to approximate heat contents (Btu-values) of the various energy sources using conversion factors listed in the Units of Measure.

2. U.S. imports of fossil fuels include imports of crude oil, refined petroleum products, and natural gas (dry).

3. Domestic consumption of energy includes domestic demand for refined petroleum products, consumption of coal (anthracite, bituminous, and lignite) and natural gas (dry), electricity output from hydroelectric and nuclear powerplants, industrial hydroelectric power production, and net imports of electric power. Approximate heat contents (Btu-values) were derived using conversion factors listed in the Units of Measure. Electricity imports were converted using the Btu-content of hydroelectric power. 1975 and 1976 electricity imports were estimated on the basis of imports levels during 1974.

4. Distillate oil heating degree-days relate demand for distillate heating fuel to outdoor air temperature. Heating degree-days are defined as deviations of the mean daily temperature at a sampling station below a base temperature equal to 65° F by convention. Numerous studies have shown that when the outside temperature is 65°, most buildings can maintain an indoor air temperature of 70° without the use of heating fuels.

Mean daily temperature information is forwarded to the National Oceanic and Atmospheric Administration, Department of Commerce, from approximately 200 weather stations around the country. These data are used to calculate statewide heating degree-day averages based on population. The population-weighted State figures are aggregated into Petroleum Administration for Defense. Districts and the national average, using a weighting scheme based on each State's consumption of distillate fuel oil per degree-day (1974 data base).

5. Domestic demand figures for natural gas liquids (NGL) as reported by BOM and reproduced in this publication do not include amounts utilized by refineries for blending purposes in the production of finished products, principally gasoline. Use of NGL at refineries is reported in a separate column. The production series cited in this publication shows both NGL produced at processing plants and liquefied gases produced at refineries. NGL produced at refineries is extracted from crude oil and hence, to avoid double counting, should not be included in calculations of total U.S. production of petroleum liquids. The NGL stock series shown in this volume includes liquids held as stocks at both natural gas processing plants and at refineries.

6. The petroleum short-term demand forecasting model uses historical consumption data to construct a regression equation for each of eight major petroleum products. Each equation attempts to capture the relationship between final demand for that product and the factors influencing that demand. The explanatory factors used in predicting product demand include (1) macroeconomic variables such as disposable personal income and gross national product (GNP), (2) real product prices, (3) variables representing the effects of weather and other seasonal variations in demand, and (4) other factors relevant to a particular product.

The assumptions underlying the current short-term forecast are:

1. Normal weather.
2. Real GNP growth rate of 6.5 percent for 1976.
3. Implementation of the Energy Policy and Conservation Act and the Energy Conservation and Production Act; specifically, the composite price of domestic crude oil is set at $7.66 per barrel beginning February 1976. This price ceiling is permitted to rise at 10 percent per year. Furthermore, stripper oil and tertiary oil is not controlled.
4. Elimination of the $2-per barrel crude oil import fee beginning in January 1976.
5. The price of imported oil is assumed to be $13.40, $13.98, and $14.73 for the years 1976, 1977, and 1978, respectively.

The short-term projections are periodically revised to incorporate observed weather conditions and actual values of macroeconomic and other explanatory variables as they become available. This "revised forecast" is termed the "backcast." On page 55 in this issue of the *Monthly Energy Review,* the backcast is solved for December 1975.

The supply model includes an assumed level of domestic crude oil and NGL production and inventory changes. Imports are determined as the incremental supply required to meet total demand for refined products not satisfied by domestic production or inventory drawdown.

7. Domestic consumption of natural gas includes the quantities sold to consumers plus the gas used for plant

and pipeline fuel, after the natural gas liquids have been extracted. All monthly consumption data are estimated.

Marketed production of natural gas includes gross withdrawals from the ground less the quantities used for repressuring and the amount vented and flared, before the natural gas liquids have been extracted.

8. The Federal Energy Administration and Federal Power Commission began the coordinated collection and compilation of monthly underground storage information from all underground storage operators in the United States in October 1975. Initial storage information reported was for the month of September 1975. Comparable monthly information for total U.S. storage operations is not available for prior periods.

The total gas in storage is the total volume of gas (base gas plus working gas) in storage reservoirs as of the end of the month. Base gas is the volume of gas, including all native gas in place at the time of conversion to storage, needed as a permanent inventory to maintain adequate reservoir pressures and deliverability rates throughout the withdrawal season. Base gas includes the volumes which will not be recoverable upon termination of storage operations. Working gas is the volume of gas above the designated base gas level available for withdrawal.

9. Bituminous coal and lignite consumption as reported by the Bureau of Mines are derived from information provided by the Federal Power Commission, Department of Commerce, and reports from selected manufacturing industries and retailers. Domestic consumption data in this series, therefore, approximate actual consumption. This is in contrast to domestic demand reported for petroleum products, which is a calculated value representing total disappearance from primary supplies.

Bituminous coal and lignite production is calculated from the number of railroads cars loaded at mines, based on the assumption that approximately 60 percent of the coal produced is transported by rail. Production data are estimated by the Bureau of Mines from Association of American Railroads reports of carloadings.

10. Quantities of uranium are measured by various units at different stages in the fuel cycle. At the mill, quantities are usually expressed as pounds or short tons of U_3O_8. After the conversion stage, the units of measure are either metric tons (MT) of UF_6 or metric tons of uranium (MTU). The latter designation expresses only the elemental uranium content of UF_6.

Following the enrichment stage, the same units are used, but the U-235 content has been enhanced at the expense of loss of material. At the fabrication stage, UF_6 is changed to UO_2, and the standard unit of measure is the MTU. We have chosen to present all uranium quantities as MTU; conversion factors to other units are given in the section on Units of Measure.

11. The units used to describe power generation at nuclear plants are all based on the watt, which is a unit of power. (Power is energy produced per unit of time.) As with fossil-fueled plants, nuclear plants have three design power ratings. The thermal rating (expressed in thermal megawatts) is the rate of heat production by the reactor core. The gross electrical rating (expressed in electrical megawatts, MWe) is the generator capacity at the stated thermal rating of the plant. The net electrical rating (also expressed in MWe) is the power available as input to the electrical grid after subtracting the power needed to operate the plant. (A typical nuclear plant needs 5 percent of its generated electricity for its own operation.)

The electrical energy produced by a plant is expressed either as megawatt hours (MWhe) or kilowatt hours (KWhe). Tables in the nuclear section show generated electricity as average electrical power. This enables a more direct comparison to design capacity and to previous months' performances. To obtain the quantity of electricity generated during a given time period (in megawatt hours), multiply the average power level (in megawatts) by the number of hours during that period.

The energy extracted from uranium fuel is expressed as thermal megawatt days per metric ton of uranium (MWD/MTU). The production of plutonium in the fuel rods is expressed as kilograms of plutonium per metric ton of discharged uranium (kg/MTU).

12. The Residential and Commercial Sector consists of housing units, non-manufacturing business establishments (e.g., wholesale and retail businesses), health and educational institutions, and government office buildings. The Industrial Sector is made up of construction, manufacturing, agriculture, and mining establishments.

The Transportation Sector consists of both private and public passenger and freight transportation, as well as government transportation, including military operations. The Electric Utilities Sector is made up of privately- and publicly-owned establishments which generate electricity primarily for resale.

13. The indicator, U.S. Dependence on Petroleum Imports, shows the percent of domestic petroleum demand constituted by imports of crude oil and refined petro-

leum products. To factor out the effects of temporary stock level changes, the fraction is calculated as the difference between demand and domestic production, divided by demand. Imports from Arab nations (which include both direct and indirect quantities) are shown separately.

14. The index, Energy Consumption per GNP Dollar, is a ratio of total U.S. energy consumption in Btu to gross national product in constant 1972 dollars. The index is adjusted seasonally and for normal weather conditions.

15. The Consumer Energy Price Indicator (CEPI) is an index of the quantity-weighted average of direct energy costs to the consumer (1972 base year). It reflects, therefore, changes in both the prices of individual fuels and in the relative quantities of each fuel consumed. Included in the computation of the CEPI are automotive gasoline and the principal residential fuels (heating oil, natural gas, and electricity).

16. Prior to January 1975, diesel fuel prices were obtained from retail gasoline dealers that also sold diesel fuel. Beginning in January 1975, the diesel fuel survey was expanded to include selected truck stops plus additional retail gasoline dealers that sold diesel fuel. Selling price estimates are based on a survey of 31 cities. Margins are based on a survey of 10 cities.

17. Prior to February 1976, the domestic crude petroleum wellhead price represented an estimate of the average of posted prices; after February 1976, the wellhead price represents an average of first sale prices. For the 2-year period January 1974 through January 1976, the old oil price at the wellhead was originally estimated to be $5.25 per barrel based on representative postings. This estimate was reivsed in July 1976 after a survey of crude oil purchasers was implemented and more complete data became available. Estimates of the average old oil price given in the table for months prior to February 1976 are based on prices for old oil reported on new oil leases, and were not derived from a statistically valid sample of old oil leases.

18. The refiner acquisition cost of domestic crude petroleum is the price paid by refiners for domestic crude petroleum, unfinished oils, and natural gas liquids and includes transportation costs from the wellhead to the refinery. The refiner acquisition cost of imported crude petroleum is the average landed cost of imported crude petroleum to the refiner and represents the amount which may be passed on to the consumer. It incorporates transportation costs and fees (including the supplemental import fees) and any other costs incurred in purchasing and shipping crude oil to the United States.

19. The estimated landed cost of imported crude petroleum from selected countries does not represent the total cost of all imported crude. Prior to March 1975, imported crude costs to U.S. company-owned refineries in the Caribbean were not included in the landed cost, and costs of crude petroleum from countries which export only small amounts to the United States were also excluded. Beginning in March 1975, however, coverage was expanded to include U.S. company-owned refineries in the Caribbean. Landed costs do not include supplemental fees.

20. The weighted average utility fuel cost for the total United States includes distillate fuel oil delivered to utilities whereas the regional breakdown for residual fuel oil prices represents only No. 6 fuel oil prices.

Units of Measure

Weight

1 metric ton	*contains*	1.102 short tons
1 long ton	*contains*	1.120 short tons

Conversion Factors for Crude Oil

Average gravity

1 barrel	*contains*	42 gallons
1 barrel	*weighs*	0.136 metric tons (0.150 short tons)
1 metric ton	*contains*	7.33 barrels
1 short ton	*contains*	6.65 barrels

Conversion Factors for Uranium

1 short ton (U_3O_8)	*contains*	0.769 metric tons of uranium
1 short ton (UF_6)	*contains*	0.613 metric tons of uranium
1 metric ton (UF_6)	*contains*	0.676 metric tons of uranium

Approximate Heat Content of Various Fuels

Petroleum	
Crude Oil	5.800 million Btu/barrel
Refined products	
Imports, average	6.000 million Btu/barrel
Consumption, average	5.5061 million Btu/barrel
Gasoline	5.248 million Btu/barrel
Jet Fuel, average	5.600 million Btu/barrel
Naphtha-type	5.355 million Btu/barrel
Kerosene-type	5.670 million Btu/barrel
Distillate fuel oil	5.825 million Btu/barrel
Residual fuel oil	6.287 million Btu/barrel
Natural gas liquids	4.024 million Btu/barrel
Natural gas	
Wet	1,097 Btu/cubic foot
Dry	1,024 Btu/cubic foot
Coal	
Bituminous and lignite	
Production	23.73 million Btu/short ton
Consumption	23.07 million Btu/short ton
Anthracite	25.40 million Btu/short ton

Electricity Conversion Heat Rates

Fossil fuel steam-electric	
Coal	10,176 Btu/kilowatt hour
Gas	10,733 Btu/kilowatt hour
Oil	10,826 Btu/kilowatt hour
Nuclear steam-electric	10,660 Btu/kilowatt hour
Hydroelectric	10,389 Btu/kilowatt hour
Electricity Consumption	3,412 Btu/kilowatt hour

☆ U. S. GOVERNMENT PRINTING OFFICE : 1977--240-848/1

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
Springfield, Va 22161

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Federal Energy Administration
Monthly Energy Review

FEA/B-77/022